2015

A Necessary Intervention: Diagnosing the Leadership Behaviors and Culture in Hospital Laboratories to Improve Employee Retention

Tiyi N. Moori
Medical University of South Carolina

A NECESSARY INTERVENTION: DIAGNOSING THE LEADERSHIP BEHAVIORS AND CULTURE IN HOSPITAL LABORATORIES TO IMPROVE EMPLOYEE RETENTION

BY

Tiyi N. Moori

A doctoral project submitted to the faculty of the Medical University of South Carolina in partial fulfillment of the requirements for the degree Doctor of Health Administration in the College of Health Professions

Dedication

To all pathology/clinical laboratory medicine administrators, managers, and supervisors.

A NECESSARY INTERVENTION:
DIAGNOSING THE LEADERSHIP BEHAVIORS AND CULTURE IN HOSPITAL LABORATORIES TO IMPROVE EMPLOYEE RETENTION

BY

Tiyi N. Moori

Approved By:

Chair, Project Committee	James Zoller, PhD	8/27/15 Date
Member, Project Committee	Amy Blue, PhD	8/17/15 Date
Member, Project Committee	Timothy Bailey, PhD	8/22/2015 Date
Dean, College of Health Professions	Lisa Saladin, PT, PhD	8/27/15 Date

Acknowledgements

I am forever grateful for the love and support toward the work for this project. I could not have imagined achieving this without the help of the following people.

To my parents thank you for fueling my desire to pursue a higher education. Enormous appreciation to my big 'sis' and 'reviewer', Sheda Moori. Thank you also to Dr. Nancy Griesinger, professor at Texas Southern University. Your comments collectively improved the quality of this work and helped me put the pieces together. To Ne Moori, VA Kollock, and Ty "Mac" McLaughlin, very few people know me as intimately as all of you. Thank you guys for letting me know that I can be more than what I am. To a guy name "Quest", thank you for your unrelenting support and always having my back. Your uniqueness is just not in your name, but your commitment in everything you do. Thank you for providing that emotional support every step of the way. To Dr. Candi Van Vleet, thank you for our insightful discussions and allowing me to vent more often than I should have. To Dr. Kim Cameron thank you for allowing me to use the Organizational Culture Assessment Instrument (OCAI). It was an invaluable and powerful tool for this study. Thank you for trusting me with it and I hope that I met your expectation. To Dr. Blair Holladay and Edna Garcia, thank you for your passion and commitment to the field of laboratory medicine as well as the use of the American Society Clinical Pathology (ASCP)'s membership list. I hope to make a positive impact in the field and also be able to teach and develop others as you have taught and developed me.

Thank you to the lab administrators and human resource personnel who participated in the study. Your efforts to retain trained and qualified laboratory professionals in the field is appreciated. To the Medical University of South Carolina (MUSC)'s SUCCESS and Writing Center staff, Amy Wahlquist and Dr. John D. Dinolfo, thank you for lending your expertise and for your patience. To Drs. James Zoller, Timothy Bailey, Amy Blue, for serving on my committee, encouraging me to write this dissertation, and continually challenging me to think "outside the box". Within this process, all of you taught me to search for the truth, and I learned that the search for the truth in one area causes more questions to be examined in other areas. Last but not least, thank you to the MUSC's College of Health Professions for accepting me into the Doctor of Health Administration (DHA - IP) program, and providing the educational experiences that inspired me.

LIST OF FIGURES

LIST OF TABLES

Table of Contents

Abstract of Doctoral Project Report Presented to the
Executive Doctoral Program in Health Administration & Leadership
Medical University of South Carolina
In Partial Fulfillment of the Requirements for the
Degree of Doctor of Health Administration

A NECESSARY INTERVENTION: DIAGNOSING THE LEADERSHIP BEHAVIORS AND CULTURE IN HOSPITAL LABORATORIES TO IMPROVE EMPLOYEE RETENTION

By

Tiyi N. Moori

Chairperson: Dr. James Zoller
Committee: Dr. Timothy Bailey
Dr. Amy Blue

This study examined behaviors and perceptions from hospitals' laboratory administrators and human resource representatives in relation to retention in accredited, hospital laboratories using the Multifactor Leadership Questionnaire MLQ (5X short) to define leadership styles as transformational or transactional, and organizational culture as clan, adhocracy, market, or hierarchy based on the Organizational Culture Assessment Inventory (OCAI). Laboratory administrators reported engaging in behaviors related to transformational leadership more often than those related to transactional leadership. The results indicated that there were no statistical differences in leadership styles between male and female lab administrators. In addition, with the regression tests, the results showed that leadership styles were not statistically significant to the culture types. However, when culture types were considered individually using ANOVA's and compared to the other p - values, leadership styles were close to the level of significance for the hierarchy culture (p-value =.083). The study suggests that, relative to the clan culture and based on the estimated coefficients, a market culture (β= -7) reduces the number of voluntary turnover positions in hospital labs and a hierarchy culture (β=41) increases the number of voluntary turnover positions in hospital labs. In addition, the number of voluntary turnover positions for lab administrators, 65 and older, was higher with a statistically significant p-value .038. No model significantly explained the influence of leader behavior and work environment characteristics on the number of voluntary turnover positions in hospital labs.

"Leadership and culture are two sides of the same coin; neither can be understood on its own" –
Schein, 2004, p. 2

CHAPTER I
PART OF INTRODUCTION

1.0 Introduction

Background

In the late 1890's, there was an urgent need to develop detection tests for epidemic diseases such as tuberculosis, diphtheria, and cholera, which were having a worldwide deadly effect on human civilization (Buttner, 1992; Delwiche, 2003; Lindler & Chapman, 2003). The first recognized pathology/clinical laboratory in the U.S. was located in 1896 at Johns Hopkins Hospital (Burke, 2000; Delwiche, 2003). Currently pathology/clinical laboratories perform analyses on human fluid and tissue samples to assist clinicians in diagnosing patients' medical illnesses. These laboratories are found in hospitals, private diagnostic labs, and outpatient clinics settings, with hospitals most often are the major employers of laboratory personnel (Bureau of Labor Statistics, 2012; Delwiche, 2003; Linder & Chapman, 2003). See Figure 1.0 for the percentage of laboratory workers in each type of setting based on the most recent survey by the Bureau of Labor Statistics.

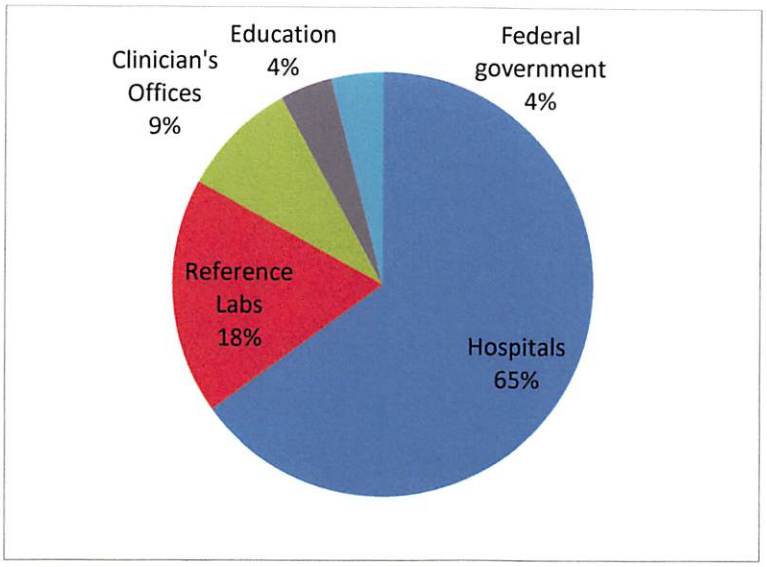


Figure 1.0 National employment of laboratory workers by industry setting. Hospitals are the major employer of laboratory workers. Most remaining jobs are in medical and diagnostic laboratories and clinician's offices. A small proportion of jobs are in educational and federal government services. Source: Bureau of Labor Statistics, 2012

Laboratory science, also known as laboratory medicine, is generally divided into two sections: Anatomic Pathology, which relates to surgical and gynecological specimens, and Clinical Pathology. Anatomic Pathology subsections usually include histology and cytology, and Clinical Pathology encompasses a number of specialty sciences, such as microbiology, chemistry, blood bank, and hematology (Rothstein, 1979). The workforce is a diverse group of professionals consisting of cytotechnologists (CTs), histotechnologists (HLTs), histotechnicians (HTs), phlebotomists (PBTs), medical technologists (MTs), and medical technicians (MLTs).

Medical laboratory personnel, laboratorians, or clinical laboratory scientists (CLSs) are a well - educated and trained workforce who face a number of challenges, including lack of recognition/remuneration compared to other allied health professions, workload stress, and tension with laboratory management (Beck & Doig, 2005; Bennett, Thompson, Holladay, Bugbee, & Steward, 2009; Clark, 2009). Additionally, as the field moves

towards changes in automation and lower Medicare reimbursements for laboratory and pathology services, many human and cultural barriers are created, causing dissatisfaction among employees (Beck & Doig, 2005; Rose, 2006). Moreover, the lab is the one area of the hospital where services do not really need to be provided in - house (Al – Enezi, Shah, Chowdhury, & Ahmad, 2008; Clark, 2008; Linder & Chapman, 2003; Malone, 2010; Paxton, 2000). In many cases, the creation of a central core laboratory, that serves a network of affiliated hospitals, through consolidation of laboratory services has negatively affected employee morale and has an effect on retention rates. With laboratories closing and the downsizing of qualified laboratory personnel, many remaining laboratory employees are stressed, and lack job commitment (Paxton, 2000; Verlander & Evans, 2007).

Research has shown that employee retention rates and/ or intent to stay within organizations may be related to organizational and management factors. Organizational culture has been the strongest predictor of retention in many studies as well as the role of managers in retaining talented employees (Dorgham, 2012; Kleinman, 2004; Schneider, Ehrhart, & Macey, 2013; Sheridan, 1992). Literature cites that leadership styles, transformational and transactional, are both effective and have reduced turnover intentions among employees in different environments. In some environments, transactional leadership is beneficial, and in most others, transformational leadership is beneficial (Hamstra, Yperen, Wisser, & Sassenberg, 2011; Kleinman, 2004). In addition, it has been cited that leadership and culture are interrelated and are linked to organizational performances such as the ability to retain staff (Ogbonna & Harris, 2000; Schmmoeller, 2010). Therefore, the background for this study includes a review of

leadership and culture theories that exam reasons why personnel leave their place of employment. In order to identify the possible factors that affect retention among laboratory personnel, accredited hospital laboratories' work environments and managerial behaviors will be explored using three data collection tools including a demographic questionnaire, the Multifactor Leadership Questionnaire (MLQ 5X short) which measures transformational, transactional, and passive – avoidant leadership styles, and the Organizational Culture Assessment Instrument (OCAI) which measures four culture types, clan, adhocracy, market, and hierarchy.

Justification of the Research

Medical laboratory professionals are the least studied group among healthcare professionals. Although often viewed as an ancillary service and rarely recognized for assisting in patient care, there are unique features that distinguish the laboratory from other healthcare disciplines (Blau, 1999). First, estimates show that pathology and clinical labs provide about two – thirds of all testing information on patients' health status, and about 70 % of all medical decisions are based on the results provided by laboratories (Battisto, 2002; Smalls 2012). Secondly, lab tests are one of the most frequent billed Medicare procedures. Lastly, medical laboratory personnel along with other allied healthcare professionals make up 60% of the total US healthcare workforce (Workforce Survey Report, 2013).

Not being able to retain skilled or trained laboratory employees negatively impacts the remaining employees, clinicians, and the hospital organization overall. For example, high turnover among laboratory personnel leaves additional workload to remaining employees, in turn creating a burden and a reason for additional workers to leave. An

unstable workforce also causes inconsistent service to clinicians. Even though laboratory staff have little or no contact with patients, with the exception of phlebotomists, who draw and label blood samples, they are essential to health care. Clinicians rely on accurate and timely laboratory results in order to ensure their patient's healthcare and effective clinical treatments. There is evidence to suggest that reduction in health professional staff below a certain level may contribute to poor patient outcomes through problems such as turn – around – times (TATs) of specimen results, and an increase in errors as staff rush to complete high volumes of work before their shift ends (Fridrkin, Pear, Williamson, Galgiani, & Jarvis, 1996; Lindler & Chapman, 2003). By maintaining a stable staff, hospitals can reasonably expect to reduce the implications of errors and meet TAT for laboratory test results (Wians, 2012).

Having a high rate of personnel turnover also creates instability in the hospital system. High turnover has a devastating effect on a lab's overall operations and reputation due to hospitals having to bear financial costs of recruiting and hiring. In 2004, the U.S. Department of Labor estimated staff retention/turnover for allied health professions to cost hospital organizations 1.7 million in dollars in recruiting and training (Waldman, Kelly, Aurora, & Smith, 2010). In one pathology and clinical laboratory, the cost of employee turnover was an estimated cost of 50% of an employee's annual salary (ASCP, 2013). Most hospitals' laboratories suffer more than 20% of turnover among staff level positions within a year, and many laboratories are forced to operate understaffed. Consequently, supervisors are spending more time working on the bench and often handling their administrative duties outside normal working hours (Bennett, Thompson, Holladay, Bugbee, & Steward, 2009). Therefore, retention of medical laboratory

personnel is a serious concern, and stability in this field plays a pivotal role in patient care. Not being able to retain these professionals impedes efficiency and effectiveness, which in turn poses a threat for clinicians to provide good healthcare services, workload burden on remaining employees, and financial constraints on healthcare organizations. The objectives for the dissertation are as follows: 1) explore the association between the cultures of departments and management behaviors that generally affect retention, and 2) identify other organizational and demographic factors that may impact the surveyed hospitals' turnover numbers.

Problem Statement

Clinicians rely on laboratory results to provide proper treatments to their patients. However, working in hospital laboratories without fully staffed has caused issues with clinicians providing treatments and increasing patients' hospital length of stay (Wians, 2012). Job dissatisfaction has frequently been cited as the primary reason for a high turnover rate among laboratory professionals (Beck & Doig, 2005). Studies have found that certain laboratory positions turnover rates exceed 20% and laboratory professionals are dissatisfied due to management, work exhaustion, and compensation (Beck & Doig, 2005, Clark 2008; McClure, 2009). These studies support the contention that work culture and management behaviors affect employees' attitudes regarding job satisfaction and organizational commitment and subsequently staff turnover.

Research Questions

While the concepts of leadership styles and work culture seem to be intuitively linked, few studies have assessed the relationship between these concepts in laboratory medicine (Avery, Lee, & Falk, 2001). To gain a better understanding of the retention issues in

laboratory medicine, this study analyzed the turnover numbers, the lab managers' perceptions of their leadership styles, and their HR personnel's perceptions of the lab departments' work cultures in selected U.S. hospital labs. The Multifactor Leadership Questionnaire Form MLQ (5X short) developed by Bass & Avolio (2004) was used to measure lab administrators behaviors, while the Organizational Culture Assessment Instrument (OCAI) developed by Cameron and Quinn (2011) was used to assess the HR representatives' perceptions about their hospital labs' working environment and their lab administrators behaviors. It is expected that the selected hospital laboratories' turnover numbers are influenced by factors such as leader behavior and work culture characteristics. The following research questions guided the study:

Q1: Is there a statistically significant difference between leadership styles in male versus female lab administrators? Is one gender more transformational (TFL) or transactional (TRL)?

Q2: Is there a statistically significant relationship between the responses from the lab administrators and their HR representatives?

Q3: Are leadership styles, TFL and TRL, statistically significant to any of the (4) culture types?

Q4: What factors, if any, predict the dependent variable, the number of laboratory turnover positions?

Definitions and Frameworks

Managers are in position to influence staff's job satisfaction and retention through their leadership behaviors. These embedded organizational underpinnings reside in organizational culture and operative management theories. Throughout the literature on organizational commitment and conditions, researchers refer to concepts of *organizational* and *work culture*. *Organizational culture* broadly relates to the norms,

values, beliefs, and assumptions shared by members of an organization about how things are done (Denison, 1996; Hurley, 1995; Schneider, Ehrhart, & Macey, 2013). Organizational culture is typically thought as the dominant characteristic of an organization. *Work culture* refers to members' shared perceptions, assuming employees in the same work environment share the same feelings toward their job, such as leadership's decision making and their behaviors (Dension, 1996; Schneider, Ehrhart, & Macey, 2013).

Studies have shown that workplace culture, organizational communication, and managerial styles all influence employee retention (Davidson, 2000, Trice & Beyer, 1993). Below is a conceptual model, showing how the research problem, turnover/retention, will be explored showing the selected variables, work culture, and leadership styles (see Figure 2.0). Multiple regression and correlational analyses will be used in this study to estimate/test the relationships between the independent variables, leadership styles and culture types and the dependent variable, turnover numbers. The model in Figure 2.0 is intended to show the relationships among the variables, leadership styles (LS), work environment (WC), and employee turnover/retention (ER). The model proposes that LS indirectly influence WC which in turns impact employees' retention resulting into turnover. The study will compare hospital laboratories' turnover numbers within the prior three years with the results from the managerial behavioral questionnaire, MLQ 5X short. The study will also determine a meaningful way to conceptualize the way leadership styles influences the labs' culture by using the OCAI. This survey will be distributed to human resources who represent the laboratory department in filling job vacancies, conducting exit interviews, and resolving employee relations concerns. These

participants will have information on why employees chose to leave their place of employment and insights in what will make them stay. Their results will be summarized and categorized into one of the (6) organizational dimensions and grouped into (4) types of culture: 1) Clan (Collaborate) 2) Adhocracy (Create) 3) Market (Compete) and 4) Hierarchy (Control) to assess various hospitals' lab culture (Cameron & Quinn, 2011). The terms *employee retention, human resources personnel, job satisfaction, laboratory managers, laboratory medicine, motivation, organizational culture, work culture, and turnover* are defined as follows:

Employee retention ability of an organization to retain its employees (Kleinman, 2004).

Human resources personnel (or simply HR) are representatives of organizations who are responsible for providing support to departmental managers and often handle work related to employee relation and recruitment (Zimmerman & Darnold, 2009).

Job satisfaction describes the extent of positive and negative views, work attitudes, workers have about their jobs (Clark, 2008).

Laboratory managers supervise the daily operations of laboratories (Smalls, 2012).

Laboratory medicine, according to the Clinical Laboratory Improvement Amendments (CLIA) defines the field as a discipline that performs testing and examines materials derived from the human body for the purpose of providing information for the diagnosis, prevention, or treatment of a disease or impairment of, or assessment of the health of human beings (CMS, 2006).

Motivation, is the psychological term for arousal, direction, interests, and persistence of behavior (Clark, 2008; Locke, 1975).

Organizational culture is briefly defined as basic assumptions about the work and the values that guide the organization and binds people and systems. Organizational culture is strongly influenced by the customs and history of the organization. This concept explains how things are done and why (Hurley, 1995; King & Byers, 2007; Schneider, Ehrhart, & Macey, 2013).

Turnover numbers are the numbers of employees who leave a workforce and are replaced (Kleinman, 2004).

Work culture refers to members' shared perceptions, assuming employees in the same work environment share the same feelings toward their job, such as leadership's decision making and their behaviors (Dension, 1996; Schneider, Ehrhart, & Macey, 2013).

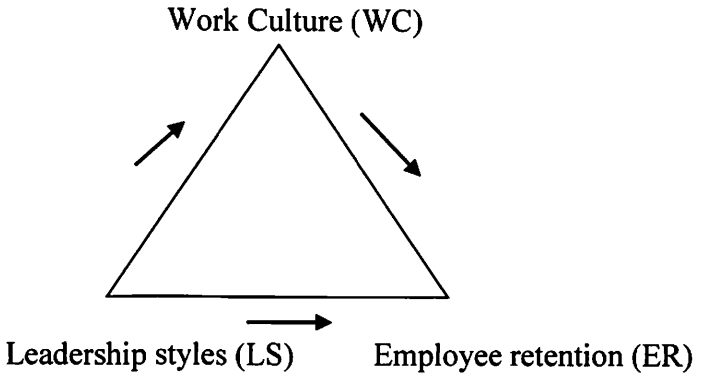


Figure 2.0 Conceptual framework

Conceptual model of factors hypothesized to impact hospital labs' turnover numbers. As in regression, the dependent variable employees' retention (ER) regresses on the independent variables, work cultural (WC), and leadership styles (LS), meaning that (ER) is predicted by (WC) and (LS).

CHAPTER II
Literature Review

Issues in the Laboratory

Recognition

Researchers have provided information about problems in the medical laboratory profession through reports and articles dating as far as the 1970's. However, there have not been many recent studies addressing retention among medical laboratory personnel in hospitals. The limited number and availability of pathology/clinical laboratory studies are provided by national, voluntary credentialing agencies such as the American Society of Clinical Pathology (ASCP) and National Credentialing Agency for Laboratory Personnel (NCA) (Bamberg, Akroyd, & Moore, 2008; Clark, 2008).

Many variables such as recognition, working conditions and management styles influence the decision of an individual contemplating leaving their place of employment (Smalls, 2009). Beck and Doig, who were advocates in redesigning the laboratory science clinical experience, have conducted studies devoted to figuring out what makes laboratorians stay with an organization, and the importance of retaining laboratory personnel. In their 2005 study the researchers focused on factors contributing to retention of laboratorians in the laboratory field. They asked (600) laboratorians, with 5 or

more years of work experience, their thoughts on what factors affected retention. When asked for the major reason for staying on their jobs, approximately, 65.2% of those surveyed indicated that the work was interesting. The suggestion on how to retain them was to provide salaries that were commensurate with their education and equivalent to nursing The study also showed that a major concern among the surveyed, 34% to 44%, was the perceived lack of appreciation from other health professionals (Beck & Doig, 2005; Kibak, 2008). The laboratorians wanted recognition from hospital managers and other healthcare workers in their organization. In their studies, doctors and nurses were most frequently listed as groups who do not value the work of laboratorians (Beck & Doig, 2005). Based on the 2007 data from the Centers of Medicare and Medicaid (CMS)'s Online Survey, Certification, and Reporting (OSCAR) database estimated that approximately 6.8 billion laboratory tests, which clinicians depend on, were performed annually in the U.S. (Wolcott, Schwartz, & Goodman, 2008). Despite this scope of influence, laboratorians are not recognized for the clinical utility of performing laboratory tests.

The desire for laboratorians to feel appreciated and recognized, is reinforced by ADVANCE's, a biweekly trade magazine for medical technologists, on - line survey which found that 48.5% technologists indicated they do not feel valued or appreciated by their employers (Patton, 2011). One factor to consider is that the profession is not fully understood nor defined. It was not until 1995 that the National Labor Board supported medical technology as a profession (Blau, 1999). In addition, the field does not have a uniformed framework for marketing as a professional discipline. For example, the profession has more than one national, professional organization and publication journals,

the American Society of Cytopathology (ASCP), American Society of Clinical Laboratory Scientists (ASCLS), and National Credentialing Agency for Laboratory Personnel, are just the most prominent organizations to name. Journals include, and not exclusive, *The Clinical Laboratory Science and Journal of Medical Technology*. Even the job title is problematic. A certified laboratory professional is called a medical technologist by ASCP, and a clinical laboratory scientist by ASCLS (Kirby, 2010). Furthermore, there is a different title for the same type of work. The titles, medical technologists and medical technicians or histotechnologists and histotechnicians, are often terms used interchangeably. Both terms describe a fully trained technologist; however, the educational requirements are different. Medical/Histotechnologists require a more advance degree than technicians. The point here is that this profession is comprised of laboratory workers that share the same tasks, but is divided into "more professional" and "less professional" strata. This lack of consensus is a major reason why laboratory professionals are the least studied group among healthcare professionals (Lyons, 2012). In addition, this adds to the difficulty of understanding the laboratory workforce and their contribution to healthcare.

Working Conditions

Working conditions for clinical laboratory workers, particularly in hospitals, are often cited as a reason for high turnover rates (Blau, 1999 ; Lunz, Harmening,& Castleberry, 1998). Laboratory departments are working without a complete staff and many of the laboratory workers in the field today are reaching retirement age (Smalls, 2012, Clark 2008). Staff reductions have been found to increase workloads for lab professionals who remain employed, in turn causes "burn – out" and leads to turnover (Linder & Chapman,

2003). In addition, earlier studies interpreted the relationship between laboratories and clinics as certain type of hierarchical teamwork between clinicians and laboratory workers (Hull, 2007). This type of hierarchical relationship does not provide the collaborative care that patients need, moreover, this type of relationship may cause laboratory workers to feel as subordinates or that they are beneath those who have direct contact with patients such as doctors and nurses (Borchardt, 2013).

Managerial Behaviors

Because laboratory managers are responsible for creating an environment in which laboratorians work and testing is performed, it will be important to explore lab managers' leadership styles. There are two types of leadership styles that will be explore in this study: a) transformational and b) transactional. *Transformational leadership* encourages change and 'transform' employees to reach beyond their limits. *Transactional leadership* rewards employees for accomplished tasks and focuses on productivity (Ingram, 2011). *Transactional leadership* can be summarized as 'transactions' between leaders and employees, in an effort to improve employees' performances (Bass & Avolio, 2004; Lowe, Kroeck, & Sivasubramania, 1996). Both Transformational and Transactional leadership have behaviors that create the full range of leadership styles (*see* Table 1 and Table 2).

In the lab, laboratorians seem to have virtually no autonomy and very little responsibility while lab managers as well as pathologists maintained strict supervision and control of their laboratory work (Kirby, 2010). McGregor in his 1960's research, *The Human Side of Enterprise,* examined how management styles can impact employee's retention. According to his research, managers tend to have two approaches to managing

their people. Theory X, behaviors similar to transactional leaders, managers believe that employees are not motivated, therefore, mangers result to controlling methods in order to motivate them or Theory Y, behaviors similar to transformational, employees are motivated and managers adopt a more integrative approach in which staff can achieve their goals by directing towards organizational objectives (Ramlall, 2004). Under the micromanagement approach, Theory X, work quality diminishes and turnover increases.

According to one article, managers micromanage for many reasons. For lab managers, the four main ones cited are a) laboratorians who are recently promoted to management are extremely skilled in problem – solving due to years having to solve problems while working on the bench. Therefore, they tend to move on their staff's responsibilities to solve their problems for them, b) managers are awarded for their accomplishments so they take control, c) managers may feel uncomfortable in delegating authority because they worry they will lose control and power, d) laboratorians are often an ambitious group of professionals and want to achieve superior results. So lab managers want to ensure mistakes are not being made that could make them look bad (Borchardt, 2013). This lack of trust leads managers to micromanage and to closely monitor their staff's work. Kouzes and Posner found that a leader's behavior explains 25 percent of the reason that employees feel motivated and committed in their workplaces (Kouzes & Posner, 2010). As a result, lab managers should accept responsibility in changing the work environment such as developing a sense of purpose, ensuring equal workloads, and their own behaviors as they relate to staff retention.

There are many organizational work variables such as job satisfaction and managerial styles that influence an employee's intent to stay which subsequently has an

impact on job turnover (Zimmerman & Donald, 2009). As lab managers, it is important to work with their HR managers in order to understand the factors that may lead to turnover. However, individuals differ widely when making their decision to stay with an organization. There is a great need for comprehensive studies that will examine the bridging association of organizational work variables between job satisfaction and retention/intent to stay, because not all employees, even if they are exposed to these same conditions, develop the same perceptions about the work. What may be overtaxing to one person may be exhilarating to another. This is partly due to one's motivation and other organizational factors such as organizational commitment. Therefore motivation is a very important part of understanding the behavior to stay. Some of the theories surrounding job satisfaction and motivation are Maslow's Theory, McGregory Theory X and Theory Y, Adam's Equity theory, and Vroom's Expectancy theory. These theories provide the foundation for managers to understand and develop strategies related to job satisfaction, reduced intent to depart, and increased retention.

Organizational Theories

Changes in healthcare are continuous, and with these changes the need to retain and recruit healthcare workers is emerging. To understand how to retain employees, one must first examine what motivates individuals within the organization. This section provides a synthesis of organizational theories and how they relate to leadership styles and culture types.

Maslow's Motivation/Need Hierarchy Theory

According to some social psychologists, individuals are motivated by a desire to attain different levels of gratification or satisfying specific needs. According to Maslow, an

American psychologist, employees are motivated by physiology needs, safety, belonging, self - esteem, and self - actualization.

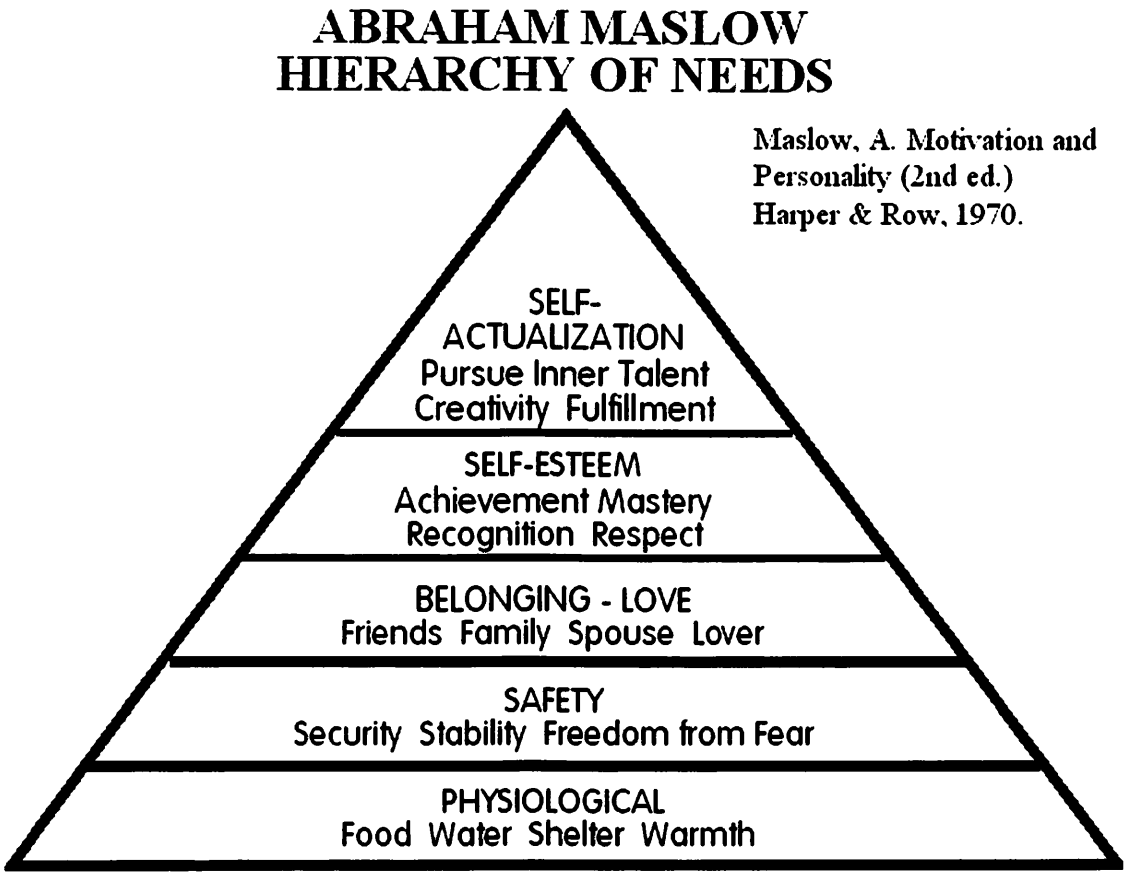


Figure 3.0 Maslow's Hierarchy of Needs. Model showing the pattern that human motivations usually move through.

As shown here in Figure 3.0, the hierarchy suggests that people are motivated to fulfill basic needs before they realize other, higher – level needs (Maslow, 1943). The highest need is self- actualization, which is a process of developing one's individual potential. In the laboratory, this framework could imply that managers can address those lower – level physiology needs such as food and shelter, so that the staff can focus more on work. When basic needs are provided thorough work, the employees tend to become aware of

their work environment. Hospital organizations also have an impact in the employee's second need, safety, which can be defined as things in the laboratory such as new, operable equipment, overview of the Chemical Hygiene Plan, and other benefits to secure employees' safety on the job. These duties are more closely aligned with a transactional leader. Moving up the hierarchy, some employees want to fulfill their desire to be love and feeling of belonging. If an employee feels that they are part of the organization that he or she works for they are more likely to be motivated to work harder (Maslow, 1943). Moreover, the more connected a person feels towards the work they are performing the closer they become to self – actualization and fulfillment. In addition, if the work that they are providing is beneficial then the employee can feel connected to the overall organization's operations. Conversely, employees will not strive toward productivity in the work environment if they feel that the organization only responds to the negative aspects of their job (Locke, 1975). For example, if doctors and nurses seldom call laboratory managers with praises for the tremendous service laboratory professionals provide to them, however, they do not hesitate to call laboratory managers to voice their complaints and grievances when results are delayed, and management is quick to point out mistakes, then staff will not be eager to put an effort to yield a positive outcome. In the lab, the personnel are constantly under scrutiny and sometimes managers fail to show them the value of their work and how their work is critical to patient care (Borchardt, 2013). They may feel disconnected to their work because they don't see the end results. Managers who tend to be more transformational can help satisfy this need of self – esteem. As we continue to move up the hierarchy, employees' needs become complex. Employees at this level are highly motivated in their roles and most likely to stay with

place of employment. We see employees who are satisfied in this need, basically well pleased individuals, and it is from this that managers expect commitment. Research shows that those who are self – actualized will continue to work for their organizations (Renesch, 2012).

Vroom's Expectancy theory states that every individual is unique and employees will perform better if there is a desirable outcome (Ramlall, 2004; Vroom, 1964). Similar to the Maslow's theory of fulfilling basic needs, employees expect managers to provide adequate information and training regarding their job so they can perform their role within the organization. When newly hired laboratory employees are hired, they are trained by experienced laboratory professionals. Studies have shown that these newly hires' trainings are often times rushed and they are given too many responsibilities too soon (Clark, 2008). Prematurely accelerating the career development of laboratorians, "too much, too soon", may have a negative effect on their intent to stay (Blau, 1999; Clark, 2008). Taking on complex task assignments or getting involved in more advanced duties too soon can result in failure, thus deflating an employee's motivation.

In the laboratory, clinical rotation provides an opportunity for students to experience the work environment. These future laboratorians receive a preview of what type of work is expected of them and what type of environment they will be working in. There are studies that have assessed the perceptions of medical laboratory students and the influence of clinical rotations on job choice. A few of these studies identified favorable and unfavorable factors that influence student's employment choice. An interesting finding among these studies is that students enter the field, with full acknowledgment of the type of work, and quit within or less than five years in the laboratory (Beck & Doig,

2007; Bragan, 2010; Kibak, 2008; Stuart & Fenn, 2004).

Equity Theory

Job dissatisfaction and behavioral changes are often seen when employees perceive what other employees are doing. This is sometimes referred to as *organizational injustice*. Some employees feel prejudice in the organization; therefore, lead to a lower retention rate in an organization (Kazi, Aziz, & Zadeh, 2012). According to Adam's equity theory, employees exhibit behaviors in which they monitor what other employees are doing compared to them. Studies have indicated that laboratorians perceive their career as being severely limited and lower pay compared to other health professionals, especially to nurses (Beck & Doig, 2005; Clark, 2008; McClure, 2009). Table 3.0 shows that salary estimates for both MT's and MLT's are relatively low compared with other allied health professions requiring the same educational preparation to enter the field (Table 3.0). In some studies, the chief advantage of the profession cited is the quality of work which helps to keep some laboratorians faithful to their job despite low salaries and other challenges (McClure, 2009).

Table 3.0

Mean Annual Salaries for Allied Health Professions, 2012

Profession	**Minimum Educational Degree**	**Annual Salary**
Occupational Therapist	Baccalaureate Degree	$ 76,400
Registered Nurse	Diploma	$ 67,930
Medical Technologist	**Baccalaureate Degree**	**$ 58,640**
Radiologic Technician	Certificate/Diploma	$ 56,450
Medical Laboratory Technician	**Associate Degree**	**$ 39,340**
Pharmacy Technician	Diploma	$ 30,430

Mean annual salaries for allied health professionals.
Source: Bureau of Labor Statistics, 2012 Occupational Employment Wages

Impact of Organizational Cultural/Leadership on Retention

Variations in cultures also have significant effect on retention rates in organizations (Sheridan, 1992). Certain cultures and leadership styles can help or hinder organizations in retaining their employees. Schein explains there are (3) levels of organizational culture: artefacts, espoused values, and basic underlying assumptions. Schein further explains that how and why things are done in an organization can be analyzed at these three different levels. As a set, these elements guide organizational behaviors such as leadership styles and retention (Schein, 2004). Artefacts refer to the visible and audible objects or structures of an organization's culture. For example, laboratory professionals usually wear scrubs in hospitals. Uniforms are common cultural objects that can serve as a symbol, symbolizing the notion that the uniformed person will conform to organizational norms. Uniforms mute individuality while providing immediate identity of the hospital personnel (Bianpoen, 2011). Espoused values are conscious strategies, goals and philosophies. They provide the justification why people and organization behave the way they do. Organizations established these values to provide their members guidelines for their behavior. These values also provide the framework for the culture of an organization and support the organization's mission in which managers are responsible for relaying to staff the organization's mission, why the organization does what it does. Underlying assumptions are the beliefs, perceptions, and thoughts, and ideologies that have become so ingrained that they have dropped out of conscious minds and are second nature to staff (Schein, 2004). Therefore, these assumptions are unconscious perceptions and beliefs taken for granted. When information is shared among employees and captured in some way, for example, during training of new

personnel, organizational interpretations or perceptions exit. These perceptions get passed from employee to employee, unintentionally creating an unstated norm or interpretation that becomes common for the organization as a whole. Despite the importance of understanding an organization's culture, these normative practices are difficult to discern until they are manifested into behaviors. These behaviors are a way an organizational culture is revealed. According to the survey instrument used in this study, there are four organizational cultures (see Table 4). The other way is primarily communicated to its members through organizational policies, in which managers are also responsible for enforcing and relating to staff (O'Reilly, Caldwell, Chatman, & Doerr, 1999). Policies can have certain unintended effects that can have negative consequences such as personnel turnover and create a hierarchy type of environment. Too much laboratory procedural information and rules can be disconnecting for newly hires and may influence their desire to quit, rather than positively influence their long – term commitment.

Measurement Instruments

A common method for capturing cultural information is through the use of survey assessments. There are several widely available quantitative tools used previously in healthcare settings that can be used to assess organizational culture in the laboratory work environment. The purpose in measuring organizational culture is to link organizational culture to leadership styles and retention. Laboratory directors, managers and human resources can use organizational cultural instruments for baseline, longitudinal, and comparison of laboratory sections for evidence to address identified retention issues. Very few studies using organizational cultural instruments exist among clinical

laboratories (Avery, Lee, & Falk; 2004). OCAI was selected for this study because it was quantitative in nature, good reliability and validity, most commonly cited in the literature, short length of time to complete the survey, and the instrument has been used in conjunction with the MLQ 5X questionnaire in other healthcare settings (Casida & Pinto – Zippo, 2008; Jung et al., 2007; Mullins, 2012; Scott, Mannion, Davies, & Marshall, 2003; Suderman, 2012). Below discusses the characteristics of OCAI which includes the theoretical/conceptual framework, strengths, and limitations.

Organizational Cultural Assessment Instrument (OCAI)

OCAI is a validated instrument, based on the Competing Values Framework (CVF) developed by professors Kim Cameron and Robert Quinn (OCAI – Online, 2004). The Competing Values Framework approach assess how things are in an organization rather than how individuals feel about them (Cameron & Quinn, 2011). The applications of this instrument in this study will measure the HR personnel's perceptions of their hospitals lab cultures. The OCAI questions are written using a scenario analysis approach in which respondents report the extent to which the written scenarios are indicative of their own organization (Cameron & Quinn, 2011).

Strengths

Validity and Reliability

OCAI has been used in over 10,000 organizations with more than 100,000 individuals (OCAI – Online, 2014; Suderman, 2012). Studies have shown that the OCAI is a viable method of assessing organizational culture and the psychometric properties, reliability and validity, of the instrument to be high (Cameron & Quinn, 2011; Heritage, Pollock, & Roberts, 2014). Cameron and Quinn summarized several studies in their research that

have used the OCAI to provide evidence of the reliability and validity of the instrument. One study tested the reliability of the OCAI among 796 executives from 86 different public utility firms. The Cronbach alpha coefficients for each of the (4) OCAI's culture types produced reliabilities between .90 - .80 (Cameron & Quinn, 2011).

Limitations

OCAI was originally developed in educational settings therefore there is a possibility that some questions may not fit the circumstances of healthcare workers and few studies have cited the OCAI as having a narrow classification of organizational cultural types (Scott, Mannion, Davies, and Marshall, 2003). More so, the survey had been described as having a typological approach, in which in assessing the results may fall in one or more "type" of culture. However, due to the laboratory being a specific field the overlapping of the four cultural types will be adequate in evaluating the departments' cultures as well as the participants have the option to leave an answer blank if irrelevant or unsure of the answer.

Multifactor Leadership Questionnaire 5X short

Leadership instruments that measure individual's unique leadership attributes includes standard personality measures such as the Multifactor Leadership Questionnaire (MLQ) and the Myers – Briggs Type Indicator (MBTI). Most previous research on leadership uses the MLQ to measure various aspects of transformational – transactional leadership. It is the most widely used instrument to assess leadership and is considered the best validated measure for transformational and transactional leadership (Muenjohn & Armstrong, 2008). The MLQ will be the questionnaire that the lab managers will use in this study. The MLQ was developed by Avolio and Bass in the late 1980s as part of an

empirical study to identify the most common leadership behaviors and it has been utilized in over (200) research studies within the past forty years (Bormann, 2011). The shorter version of this 24 – item survey, is the MLQ 5X Short form which is a survey using a five point frequency rating. The rating scale ranged from 0 = not at all, 1 – once in a while, 2 – sometimes, 3 = fairly often, 4 = frequently, if not always. Measuring the full range of leadership, through the MLQ, implies that every leader displays a frequency of both the TFL and TRL behaviors, but each leader's style involves more of one and less of the other (Lowe, Kroeck, & Sivasubramania, 1996).Therefore, a given manager may be both transformational and transactional.

Conclusions

Several conclusions can be made from the Literature review. First, an important issue facing pathology/clinical laboratory science is the need to define and increase the importance and visibility of the profession in the minds of other healthcare professionals as well as the general public. The implications of Maslow's theory provide useful insights for managers to find ways to motivate their employees, as well as, develop strategies to understand their employee's needs. Secondly, it is assumed that managers have a responsibility in developing a climate in which their employees can develop to their fullest potential (Ramlall, 2004). Failure to provide such climate would theoretically lead to lower job satisfaction and higher employee turnover, therefore, affecting retention. Lastly, although little empirical research exists to support the link between organizational culture and retention, there is little doubt among experts that this relationship exists (Kivimaki et al., 2007; Meyer & Allen, 1991; MacIntosh & Doherty, 2010; Ramlall, 2004; Schein, 2004; Sheridan, 1992). Like all survey instruments, limitations of the

OCAI and the MLQ surveys and all subsequent tools discussed in this section are potentially bias and limited to data collected at a single point of time. There are no ideal instruments for culture exploration or leadership styles (Jung et al., 2007).

CHAPTER III
METHODOLOGY

Study Design

A quantitative study was undertaken to evaluate lab administrators' perceptions of their leadership styles as well as their HR lab personnel's perceptions of hospital laboratories' work environment and the lab administrators' behaviors. The three leadership outcomes from the MLQ (5X short) survey and passive/avoidant leadership style were not included in the study's analysis, because the outcomes were not of interest in this study; moreover, passive/avoidant leadership style is not positively related to retention and contrasts with transformational leadership, leaders who transform their staff into becoming leaders themselves, and transactional leadership, leaders who give contingent rewards to staff in exchange for performance (Bass & Avolio, 2004; Frooman, Mendelson, & Murphy, 2012; Lowe, Kroeck, & Sivasubramaniam, 1996). In this paper, the focus will be on the leadership styles that positively contribute to retention.

Sample Selection

The PI conducted the study for three months, October 2014 to January 2015. The 2,926 self - administered surveys (983 to HR representatives of the laboratories and 1,943 to lab managers) were distributed to (16) states in the U.S. by stratified sampling.

Of the 2,926 surveys distributed, one hospital was identified as closed, (6) hospitals were not able to participate, (21) of the letters to participate were undeliverable, (13) hospital labs are under one centralized lab, and (3) hospital labs referenced their lab tests to other private facilities, leaving a sample of 2,882. The two surveys, MLQ (5X short) self-report form and OCAI, yielded usable responses from 200 participants (57 HR representatives and 143 lab administrators). Having a proportionate of survey responses for lab administrators of 7.4%, ranges from 6.2% to 8.6%, for HR representatives of 5.8%, ranges from 4.4% to 7.5%, at a 95% confidence interval (Appendix A).

Hospitals' laboratories were selected versus private labs and clinics because they employed more of the staff positions and personnel in this study than do other facilities. Although several regional and national commercial laboratories provide laboratory testing services for many healthcare facilities across the U.S., the percentage of the nation's laboratory workforce employed in hospitals (47%) is greater than referenced laboratories (Bureau of Labor Statistics, 2012).

This study differed because lab administrators were surveyed on their perceptions about their own leadership behaviors versus surveying employees about their perceptions of management. Studies have shown than managers perceive their leadership behaviors differently from those who report to them (Bormann, 2011). Bass and Avoilo noted that leadership is in the "eye of the beholder" (pg.9) and perceptions by individuals may be different. Human resources were surveyed because they conduct exit interviews from staff who leave the organization. Exit interviews can provide important retention information about job satisfaction and potential improvements within an organization.

Instrumentation

To measure the categorical variables, three data collection tools were utilized in the study including demographic surveys. The MLQ (5X short) survey was developed and administered through MindGarden, Inc., and the OCAI was distributed by Survey Monkey. The PI obtained permission to use the two survey instruments. The license to administer the MLQ (5X short) was purchased from MindGarden, Inc., the sample permission letter is reproduced in Appendix B (*see* Appendix B). Because the survey is copyrighted, it was not possible to include the entire instrument in the appendix; thus, sample of questions are provided (*see* Appendix C). However, the OCAI survey is able to be printed in its entirety in the appendix. Demographic questionnaires were developed for both surveys to collect characteristics of the participants and information about their department's turnover. The MLQ (5X short) and the OCAI measure ordinal responses (i.e. Five - point Likert scale) in which respondents rated the two surveys on a scale 0 to 4, ranging from 'not at all' to 'frequently, if not always' to measure the frequency of the perceive behaviors and cultures, and the demographic questionnaires measure dichotomous responses (e.g. yes/no, female/male) (Appendix C).

Multifactor Leadership Questionnaire (5X short)

Scoring the MLQ (5X short)

The MLQ is a 45 - item questionnaire, (36) questions and a set of outcomes that measures transformational, transactional, and passive/avoidant leadership styles utilizing a Five - point Likert scale. The scores for each leadership behavior were averaged, calculated by summing each behavior category and dividing by the number of items that make – up the scale. If an item is left blank, the total for that scale is divided by the number of items answered. For example, based on the scale score, which is an aggregate

of the individual survey questions, an average of 28 questions (TFL = 20 questions and TRL = 8 questions) was taken which produced a fractional number, i.e., 3.60, 2.40, 3.24. The highest average scale score, the average of all the individual survey questions, from all leadership behaviors is used as an indicator of the characteristic of the leadership style (if the means of TFL > the means of TRL = an individual was determined to have a TFL leadership style; if the means of TFL < the means of TRL = an individual was determined to have a TRL leadership style) for each surveyed lab administrator. Transformational Leadership is measured according to the following five behaviors: Idealized Influence Attributes (IIA), Idealized Influence Behaviors (IIB), Inspirational Motivation (IM), Intellectual Stimulation (IS), and Individualized Consideration (IC). Transformational leadership style score for each participant was derived by averaging all of the scores from the items contained in the five transformational behaviors, a total of 20 items. Transactional Leadership is measured according to the following two behaviors: Contingent Reward (CR) and Management by Exception Active (MBEA). Transactional leadership style scores were derived by averaging all of the scores from the items in the two transactional behaviors, a total of (8) items. Note, a given lab administrator can engage in more than one TFL and TRL behavior. The primary difference resides in how lab administrators behave towards their staff as well as how they motivate them (Lowe, Kroeck, & Sivasubramania, 1996).

Organizational Culture Assessment Instrument

Scoring the OCAI

Developed by Cameron and Quinn, the OCAI, divides organizational culture into four culture types: Clan, Adhocracy, Market, and Hierarchy. This survey requires participants

to respond to the following six key dimensions: Dominant Characteristics (DC), Organizational Leadership (OL), Management of Employees (ME), Organizational Glue (OG), Strategic Emphases (SE), and Criteria of Success (CS). Each dimension has four alternative answers, thus bringing the total items on the OCAI survey to twenty – four.

With the OCAI response scale, participants divide 100 points among the four culture types; the higher number of points is given to the culture type that best represents the participant's organization. For example, if a participant feels choice A (Clan) is very similar to his/her work environment, B (adhocracy) and C (market) are somewhat similar to the work environment, and choice D (hierarchy) is hardly similar, then a participant may give 55 points to A, 20 points to both B and C, and 5 points to D. The total must equal 100 points for each of the six culture dimensions, i.e. dominant characteristics (DC), organizational leadership (OL), management of employees (ME), organizational glue (OG), strategic emphasis (SE), and criteria for success (CS). This is known as an *ipsative rating scale* (Cameron & Quinn, 2011).

This study used an alternative rating scale, the Five - point Likert Scale, in which respondents rated the OCAI questionnaire (Appendix C-4). The strength of the culture is determined by their means, the higher the mean, the more dominant the cultural type. The researcher selected this type of response scale to have both surveys, MLQ (5X short) and OCAI, on the same response scale, to produce independent responses, easier computing and to eliminate possible clarity issues. However, differentiation was sometimes difficult to interpret when comparing individual responses. It is difficult to determine whether the distance between 0 = not at all to 1 = once in a while is the same as between 1 = once in a while to 2 = sometimes because the interval between points on

the ordinal Likert scale are not equal. Certain statistical analyses that are based on assumptions and independent response to each questions, are inappropriate for analyzing this kind of ordinal data. For example, ordinal data should not be used to calculate average scores; therefore, statistical tests that are used to test for independence should not be applied (Jamieson, 2004; Westland, 2014). However, some researchers who have used a Likert response scale to analyze leadership and culture have used independent testing statistical procedures similar to the ones used in this study (Hardman, 2011; Mullins, 2007; Scammon et al., 2014).

Data Collection/Procedure

CMS' On – line Survey, Certification, Reporting (OSCAR) database was used to obtain the mailing list of the selected hospitals. OSCAR contains information on more than 200,000 medical and diagnostic laboratories that provide testing services in the U.S. of which 15,560 are accredited labs, and 8,961 are accredited hospital laboratories (CMS, 2014). States with fewer than (9) accredited hospitals were excluded from the study, as well as, some states that had been researched in previous studies of retention/shortages in laboratory medicine. California, Texas, and Florida were excluded because these states required inputting a large number of zip codes in the OSCAR database, having to look up every zip code listed in each city in the three states. The state of New York and Washington state were excluded because these states do not authorize accreditation as a basis for lab licensure. The labs in these states are exempted from federal regulations and are surveyed by respective state agency or a CLIA's exempt programs (U.S. Government Accountability Office, 2006). Sixteen states were selected within the four regions, four or

five states per regions. Rhode Island was originally in the sample, however, after further review was excluded because the state has eight total accredited hospitals.

1. In the first mailings, 983, that was sent out in early October included a cover letter addressed to the Human Resource representative of Pathology/Laboratory Services at each selected hospital. The letter contained a brief explanation of the project, and the link to the OCAI survey in Survey Monkey, and a notice that lab managers would be contacted as well as they will participate in a different survey (Appendix D).

2. The second mailings, 1,943, sent out almost a month later included a letter addressed to Anatomic Pathology (AP) and Clinical Laboratory (CLS) managers, excluding those hospitals that were not able to participate, along with an endorsement letter from an individual influential in the field (Appendix E). Completed surveys were entered into a log book on a weekly basis to track responses, and to ensure that anyone who had responded would not receive future contacts. In some instances, however, some individuals received multiple mailings, e.g., the lab manager over the centralized lab that performs lab tests for multiple hospital sites.

3. After the mailings were completed, emails were sent using the American Society for Clinical Pathology (ASCP)'s, a professional organization whose Board of Registry (BOR) certifies laboratory professionals, membership lists of 2,089 members. To increase response rates, potential respondents were addressed by their names in the cover letter of the email; this elicited a better response rate rather than the anonymous mailings 'to HR representatives' or 'to AP/or CLS managers'. However, had (368) undeliverable email addresses, (12) individuals responded stating they were retired from the lab, (2) not able to participate, and in one case, wished to be removed from the email list.

4. Follow up phone calls were placed to non – respondents which generated a few additional responses. Messages were left for those unable to reach.

Data Analysis

The statistical package for the social sciences, SPSS, was used according to the license owned by the Medical University of South Carolina to analyze the data based on the following descriptive statistics: mean and standard deviation, Chi - square goodness - of - fit, and the Spearman's rho correlation coefficient. A value, (α=.05), significance level was used for all statistical tests performed. The Chi - square tested, using counts of male

and female lab administrators and their determined leadership style (the highest average of all the scores from TFL and TRL behaviors), whether there was a significant relationship between two nominal variables, leadership styles and gender, which states '*the variables are independent.*' Spearman's rho correlation, the descriptive correlational design, was used to assess if the lab administrators and their HR personnel's survey responses, using average scores from the two surveys, were statistically related. In addition, with this research design, regression analyses occurred. Multivariate multiple regression was used to study the effects of two independent predictor variables, TFL and TRL leadership styles, using a Multifactorial Model (MANOVA) on the average values of more than one dependent variables, the culture types, to be analyzed simultaneously. Also series of multiple linear regressions were used to predict which one or more of the independent variables influence the number of laboratory turnover positions. Lab administrators and their turnover numbers were described in relation to data obtained from the demographic questionnaires. The demographic questionnaires included items regarding lab administrators' gender, age, and the use of one or more retention strategies in their respective labs. These items aided the researcher in the analysis using multiple regression on variables that may have impacted the laboratory turnover numbers.

Table 5 list each of the research questions and what test methods were used.

Table 5
Summary of Research Questions and Data Analyses

Research Question with Hypotheses	Inferential Statistics in SPSS
Q1a: Is there a statistical significant relationship between leadership styles in male versus female lab administrators? Is one gender more transformational (TFL) or transactional (TRL)? Ho: Leadership styles, (TFL and TRL), are independent of gender. Ha: Leadership styles, (TFL and TRL), depend on gender.	Test: Chi – square goodness-of-fit independence test
Q2. Is there a statistically significant relationship between the responses of lab administrators and their HR representative? Ho: There is no statistically significant relationship between the responses of lab administrators and their HR representatives. Ha: There is a statistically significant relationship between the responses of lab administrators and their HR representatives.	Test: Spearman's rho correlation coefficient Independent variable: Average HR scores Dependent variable: Average TFL and TRL scores from Lab administrators
Q3. Are the leadership styles, TFL and TRL, statistically significant to any of the (4) culture types? *Ho: All Betas (variables) are equal to zero.* *H1: At least one variable in the regression equation is different from the others.*	Test: Multivariate Multiple Regression (MANOVA design) Independent variable: Leadership Styles Dependent variables: (4) cultural types, clan, adhocracy, market, and hierarchy Covariates: TFL, composed of 5 behaviors and TRL, comprised of two behaviors
Q4:Which factors, if any, predict the dependent variable, the number of laboratory turnover positions? *Ho: All Betas (variables) are equal to zero.* *H1: At least one variable in the regression equation is different from the others.*	Test: Multiple Linear Regressions Independent variable: leadership styles, culture types, lab volume/size, geographical regions, lab administrators' ages and gender, utilization of one or more retention strategy. Dependent variable: laboratory turnover numbers

Summary of Research Questions and Data Analyses. Table contains research questions and corresponding statistical methods present in the dissertation.

Limitations

There are limitations to this study. The sample in the study was selected from stratified sampling, and those who took part in the study were less than the proportion of surveys that were mailed (*see* Table 6). Due to the nature of voluntary response sampling, few things could have been done to enhance the quality and quantity of the

responses. One was enhancing the value of participation and obtaining buy – in from not only lab managers, but the labs' HR directors, especially considering that 43% of the respondents from the MLQ (5X short) questionnaire were lab directors rather than the lab managers, in which the survey's cover letters were addressed to (Figure 4.0). This is not to say that one leadership style is more prevalent than the other at upper levels of management than at lower levels. However, contacting Directors of the laboratories and the Department Head of human resources would have been beneficial as they generally have complete decision –making power regarding what occurs in the departments. Directors are also highly likely to want to notify HR before any research is conducted. One healthcare facility surveyed, had a formal system for reviewing research requests. The researcher should have spoken to the Directors to engage them as stakeholders in the research and to identify any reviewing process as well as obtain assurance that lab managers would participate in the study. Furthermore, this study was conducted, in the year of 2014, during recent economic downturn. During the time, healthcare employees were losing their jobs, leaving the additional workload to remaining employees, in turn creating a burden and a reason for additional workers to leave. Therefore, the economic downturn could have had an effect on the turnover numbers. Moreover, incomplete surveys, researcher bias, and access issues contribute to the limitations of the study.

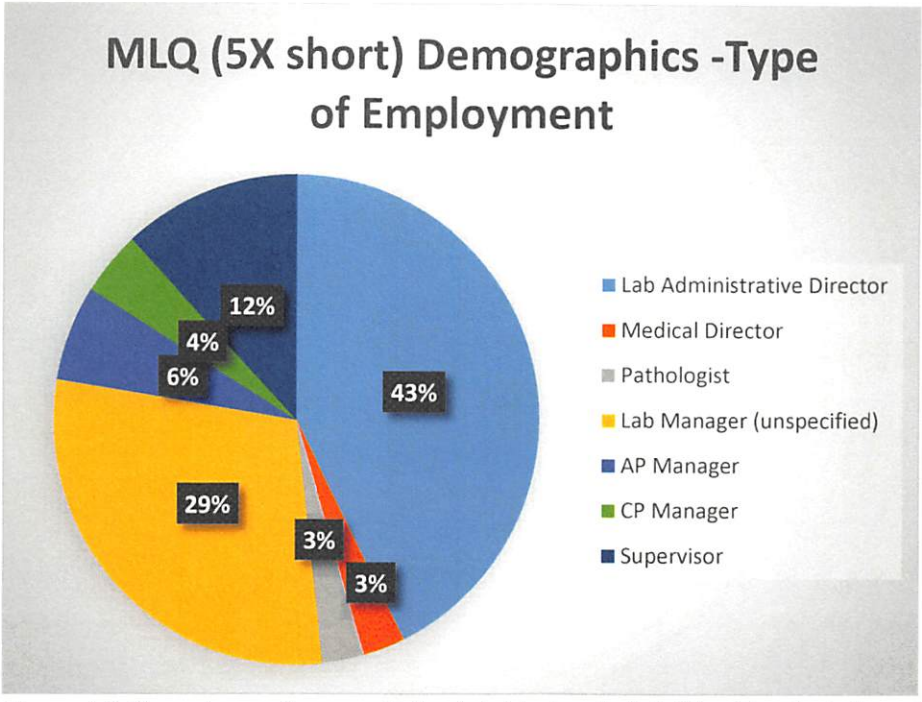


Figure 4.0. Percentages of surveyed lab administrators by job titles. The chart shows the percentages of lab administrators who completed the MLQ (5X short) survey.

Incomplete Surveys

Another issue was incomplete surveys. There was a higher incidence of skipped questions and incomplete surveys than completed. Of the 89 respondents from the demographic questionnaire for the OCAI survey, N = 33 (37%) did not complete the section requesting turnover numbers. In the MLQ (5X short) survey, N = 17 (12%) participants skipped Q18: *'I instill pride in others for being associated with me'*. Also, some respondents did not seemed assured of the anonymity and privacy of the surveys, and therefore inputted false and/or incomplete information. For example, N = 77 respondents did not provide the four digit correlation code and/or inserted an incorrect hospital name such as placing Children's Hospital as the hospital name rather than the actual hospital name. Another drawback of self – administered surveys is that the researcher cannot be certain about who actually answered/or completed the surveys; when letters were sent to hospitals, it was impossible to monitor whether the letters had

gone to lab managers and their HR representative who were to receive them. Also, some of the letters directed to HR were forwarded to lab managers who completed both the OCAI and MLQ (5X short) surveys using a secondary email address.

Possible Researcher Bias

Surveys were sent to 1,943 lab managers thought to be interested in both (a) taking the survey, and (b) receiving the data on survey results to benefit their field. The researcher promised to send the results to respondents who indicated interest in the topic. According to Dillman (1991), a study will receive better attention and therefore generate a better response rate if the respondents have a strong interest in the research topic. The researcher assumed potential participants would be on board and influenced by the endorsement letter that they received, that was crafted to encourage recipients to voluntarily participate in the study. Furthermore, lab administrators who identified their own leadership styles and HR personnel reporting their perceptions on the lab administrators' behaviors introduce a risk of bias depending on the relationship of the HR personnel and their lab administrator.

Access Issues

Another issue was problematic with multiple responses from participants concerning invalid and inactive email addresses, as well as several participants were not able to access the link they received in their cover letter inviting them to participate in the study, this reducing the sample size.

Protection of Human Subjects

All participants were treated in accordance with the ethical guidelines of the Medical University of South Carolina Institutional Review Board (IRB). Participants had the

freedom to withdraw from the study at any time, if they wished. By completing the survey, the respondents acknowledge the consent to participate in the study. Although there were no identifiable risks for participating in this study, to guarantee confidentiality, surveys included a four digit code for human resources (hospital names were not listed in the survey results). The same codes were used in the laboratory administrators' surveys to link the two survey results. The codes were used only to correlate survey results from the same hospital. This study obtained prior IRB approval and met the IRB's criteria for *Exemption for Continuing Review* (Appendix F).

CHAPTER IV
RESULTS

Results/Findings

Response rates

The response rate for lab administrators is 7.4% and the response rate for the human resources personnel is 5.8%. The four digit code on the distributed surveys was used to protect the confidentiality of participants survey results, and correlate the (13) hospitals where a HR representative and a lab administrator from the same hospital completed both the MLQ (5X short) and OCAI surveys. Table 8 shows the number of survey responses by regions (*see* Table 8).

Table 8

Response Rates by Regions

Region	No. of surveys mailed	No. of surveys completed		No. of hospitals that responded	Responses (%)
		No. of MLQ (5X short) completed	No. of OCAI completed		
South	1,205	59	25	90	7.5%
Mid - west	1,104	46	25	89	8.1%
West	389	26	7	37	9.5%
North east	228	12	0	17	7.5%

Response rates by regions. Response rates from hospitals' lab administrators and HR personnel by regions.

From the MLQ (5X short) self - rating survey, the respondents represented every level of laboratory management, from supervisors to Lab Directors. Of the N = 143 lab administrators, the representative lab administrator was most often a female (59%, N = 84), 55-64 years of age (36%, N = 52), working in a mid - volume laboratory (57%, N=82).

Table 9

Demographic Variables of Surveyed Lab Administrators

	Frequency (#)	**Percentage (%)**
Characteristics N=143		
Gender		
Male	58	41%
Female	84	59%
Age		
25 -34	14	10%
35- 44	25	18%
45- 54	42	29%

55 – 64	52	36%
>65	10	7%
Testing Volume/Lab Size		
< 100,000 tests per year (Large lab size)	27	19%
Between 100,001 to 1 million tests per year (Mid lab size))	82	57%
>1 million tests per year (Small lab size)	34	24%
Positions		
Lab Administrative Director	61	43%
Medical Director	4	3%
Pathologist	4	3%
Lab Manager (unspecified)	42	29%
AP Manager	9	6%
CP Manager	6	4%
Supervisor	17	12%

Demographic variables of surveyed lab administrators. The table shows the demographics of the surveyed lab administrators.

Lab administrators reported engaging in behaviors related to transformational leadership more often than those related to transactional leadership. Of the seven scale scores, the five transformational and the two transactional behaviors, the highest mean score was reported for Individualized Consideration, a transformational behavior and the lowest mean score was reported for Management by Exception/Active, a transactional behavior. Tables 10, 11, 12, 13 and Table 14 and the corresponding Figures 5, 6, and 7 shows the means, and relative frequencies of TFL and TRL leadership behaviors as well as the (4) culture types: clan, adhocracy, market, hierarchy.

Table 10

Descriptive Statistics for TFL and TRL

Dimensions	Abbreviations	Mean	STD
Transformational (TFL)			
Idealized Influence (Attributes)	IIA	3.1	0.6
Idealized Influence (Behaviors)	IIB	3.2	0.5
Inspirational Motivation	IM	3.2	0.6
Intellectual Stimulation	IS	3.2	0.5
Individualized Consideration	IC	3.3	0.5
Transactional (TRL)			
Contingent Reward	CR	3.2	0.6
Management by Exception: Active	MBEA	2.1	0.9
Passive/Avoidant			
Management by Exception: Passive	MBEP	0.7	0.6
Laissez- Faire	LF	0.4	0.5
Three Outcomes			
Extra Effort	EE	2.9	0.7
Effectiveness	EFF	3.4	0.5
Satisfaction	SAT	3.4	0.5

Descriptive Statistics of the leadership styles and (3) outcomes variables as measure by the MLQ (5X short) survey. The surveyed lab administrators, (N =142 one participant responded to the demographic questionnaire but opt - out of the MLQ 5X short survey), reported engaging in behaviors related to transformational leadership more often than those related to transactional leadership with the highest mean score for Individualized Consideration (IC), M = 3.3, SD = 0.5. *Note:* The smaller the standard deviation (SD), the higher the agreement among group self - ratings. A value of 0.0 would mean complete agreement among lab administrators' responses. The possible range of scores was from 0 'not at all' to 4 'frequently, if not always'. Because the MLQ (5X short) survey is copyrighted, it was not possible to include the entire instrument in the appendix; thus, sample of questions are provided (*see* Appendix C and Tables 11 and 12).

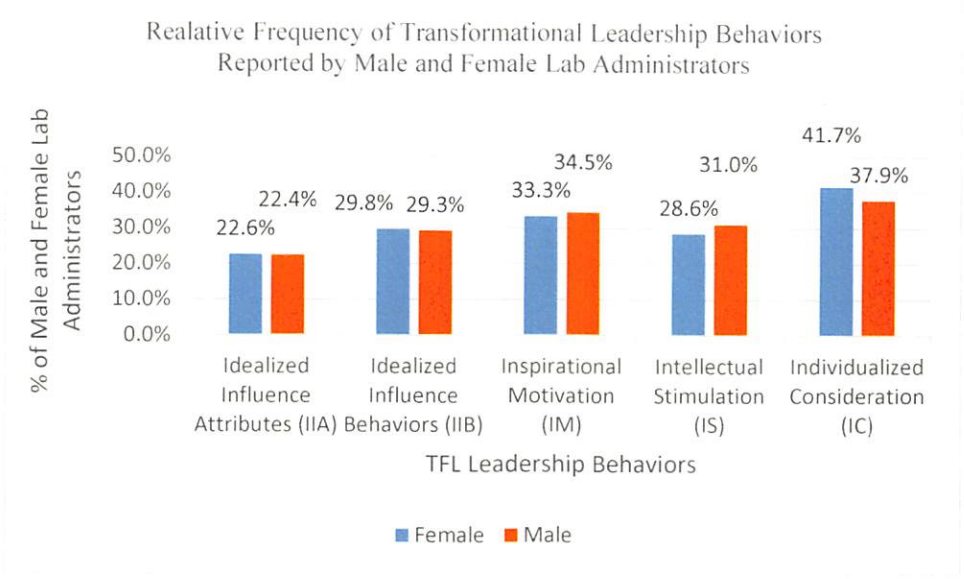


Figure 5.0. Relative frequencies of male and female lab administrators who reported engaging in specific TFL behaviors. Of the Transformational behaviors, IIA, IIB, IM, IS, and IC, and the 84 lab administrators who are female, 35 (41.7%) perceive themselves more towards Individual Consideration (IC) and the 58 lab administrators who are male, 22 (37.9%) perceive themselves more towards Individualized Consideration (IC). Note numbers do not tally to 100% because lab administrators reported engaging in more than one TFL behavior. Furthermore, no one lab administrator reported engaging in all 5 TFL behaviors (*see* Table 13).

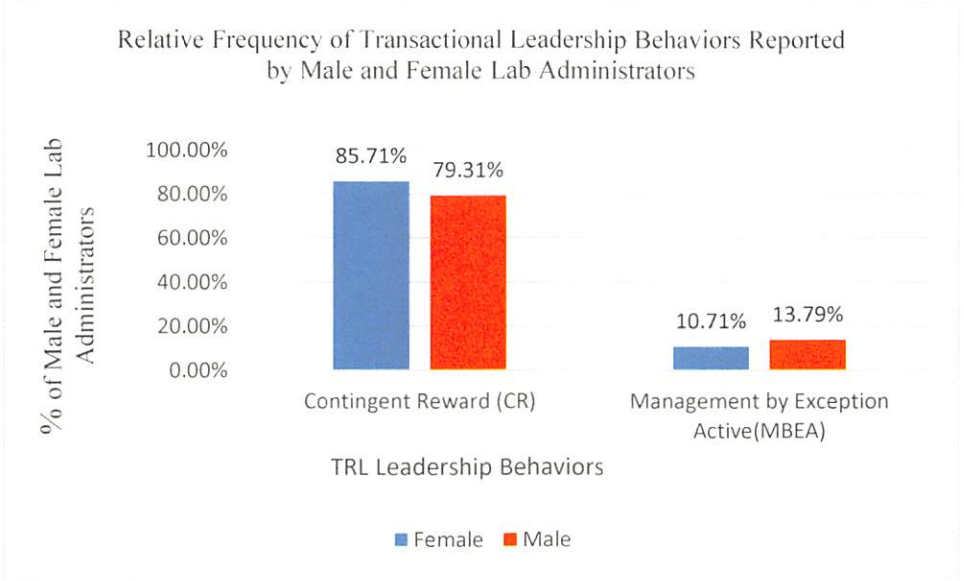


Figure 6.0 Relative frequencies of male and female lab administrators reported engaging in specific TRL behaviors. Of the Transactional behaviors, CR and MBEA, the 84 lab administrators who are female, 72 (85.7%) reported engaging in Contingent Reward behaviors (CR), 9 (10.7%) reported engaging in MBEA and 3 (4%) reported engaging in both behaviors. Of the 58 lab administrators who are male, 46 (79.3%) reported engaging in Contingent Reward behaviors (CR), 8 (13.7%) reported in engaging in MBEA behaviors, and 4 (7%) reported engaging in both TRL behaviors.

Table 14
Descriptive Statistics for the (4) Culture Types

Culture Types	Abbreviations	Mean	STDV
Clan (Collaborate)	**A**	**3.3**	**0.5**
Adhocracy (Create)	**B**	**2.2**	**0.4**
Market (Compete)	**C**	**2.3**	**0.5**
Hierarchy (Control)	**D**	**3.2**	**0.8**

Descriptive statistics of the (4) dominant cultures as measure by the OCAI survey. Comparison of means suggest that, as a group (N=57), the HR personnel over the labs reported clan culture (collaborate) the more dominant cultural type for the hospital laboratories, with hierarchy culture (control) being the next dominant culture.

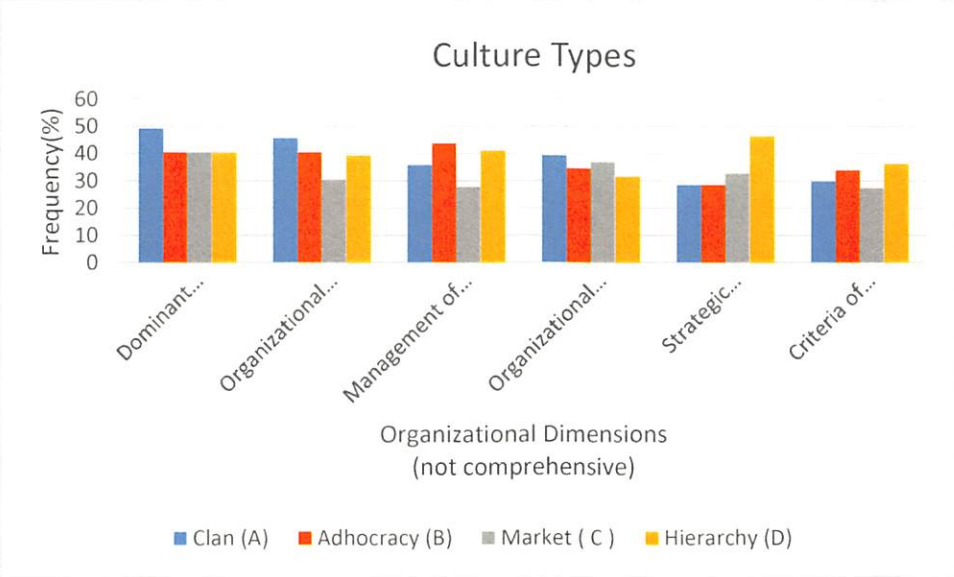


Figure 7.0 Culture types based on the 6 culture dimensions. The table shows clan and hierarchy cultures to be reported by HR as the dominant culture types for two of the culture dimensions: dominant characteristics (DC) and strategic emphasis (SE), respectively. HR reported adhocracy to be the dominant culture for the culture dimension management of employees (ME) (*see* Appendix G to see the description of leader type based on Cameron and Quinn's Competing Value Framework for each culture profile).

According to the demographic questionnaires, phlebotomy has the highest turnover numbers in the hospital laboratories, and 38% of lab administrators are currently using/ or implementing some type of retention method in their labs (see Table 15 and Table 16).

Table 15

Turnover Numbers of Laboratory Positions

Regions	CTs	HTs/HLTs	MLTs	MTs	Phlebotomists	Lab Assistants or Prep Techs	Totals
West	100	101	63	93	108	23	488
Mid west	2	28	26	63	223	71	413
South	0	8	117	108	222	22	477
North east	0	1	0	3	10	1	15
Totals	102	138	206	267	563	117	1393

Turnover numbers of laboratory positions. According to the OCAI demographic questionnaire, the West has the highest turnover numbers, and the North east have the lowest. Numbers may be unrepresentative due to higher concentration of surveys sent out to selected regions (*see* Table 6). However, all regions have the highest turnover in the phlebotomy position.

Table 16

Retention Strategies used by Lab Administrators

		Administrators Using N=54
Retention Strategies/Material	#	%
Sign – on bonuses	2	4%
Being engaging	6	11%
Recognition	6	11%
Surveys	7	13%
Rounding	8	15%
Peer interviewing/Buddy system	6	11%
Thank you notes	2	4%
Celebrations i.e. birthdays, service awards, employee of the month	3	6%
Educational Conferences	5	9%
Annual, 30- 90 days evaluations	5	9%

Compensation i.e. pay increase and benefits	13	24%
Incentatives , e.g reduced parking fees, offered flexible hours, and tuition remibursements	5	9%
Employee Lab Council	1	2%
Providing feedback	1	2%
Monthly meetings/daily huddles	2	4%

Retention strategies used by lab administrators. According to the MLQ 5X demographic questionnaire some lab administrators use a combination or all methods listed. Of the N=143 lab administrators, 24% utilizes compensation in wages and sign – on bonuses to retain employees in the labs versus other incentives.

Inferential Statistics

Below is the research question, *Q1a*, and the hypotheses that were tested using the Chi square goodness - of - fit independence test. To begin the independence test, one must first state the null and alternate hypotheses (Fraber & Larson, 2009).

Research Question 1a

Q1a: Is there a statistically significant difference between leadership styles in male and female lab administrators? Is one gender more transformational (TFL) or transactional (TRL)?

Ho: Leadership styles, (TFL and TRL) are independent of gender.

Ha: Leadership styles, (TFL and TRL), depend on gender.

A chi – square goodness - of- fit independence test was performed to test the null hypothesis. The corresponding crosstab table below shows that the observed counts are slighlty different from the expected counts. The expected counts are counts that are expected to be observe if gender is independent (no relationship) to leadership styles. Table 17 shows that one would expect 72.8 females to be transformational leaders, and

expect 11.2 females to be transactional leaders. Correspondingly, one would expect 50.2 males to be transformational leaders, and expect 7.8 males to be transactional leaders. The SPPS's contingency table of leadership styles and gender is in the list of Tables (*see* Table 18)

Table 17
Crosstab Table for Leadership Styles and Gender

Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL) * Gender Crosstabulation

			Gender		
			Female	Male	Total
Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	TFL	Count	71	52	123
		Expected Count	72.8	50.2	123.0
	TRL	Count	13	6	19
		Expected Count	11.2	7.8	19.0
Total		Count	84	58	142
		Expected Count	84.0	58.0	142.0

Cross Table for Leadership Styles and Gender. Of the 84 lab administrators who are females, 71 perceive themselves as transformational leaders (TFL) and 13 perceive themselves as transactional leaders (TRL) based on the highest average score of all TFL behaviors. Of the 58 lab administrators who are males, 52 perceive themselves as transformational leaders (TFL) and 6 perceive themselves as transactional leaders (TRL) based on the highest average score of all TRL behaviors.

Table 19 contains the SPSS Chi –square output, which shows that none of the cells in the contingency table have expected counts lower than 5, thus verifying the use of the Chi-Square test as an appropriate statistical method for this study versus the Fisher's exact test or Barnard's test.

Table 19

Pearson Chi – square Output for Leadership and Gender

Chi – Square Tests			
	Value	df	Asymp. Sig (2 – sided)
Pearson Chi – Square (x^2)	.779	1	.377
N of Valid Cases	142		

0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.76.

Pearson Chi-square Output for Leadership and Gender. This table shows the p – value for Pearson Chi – Square, listed as Asymp. (2 – sided), is .337 and the test statistic is .779. Based on the p-value, the null hypothesis is not rejected. The p – value indicates that under the assumption that the null hypothesis is true, the probability of obtaining the test statistic value .779 or a value more extreme (in favor of the alternative hypothesis) is .337

Two key assumptions to be aware of before applying the Chi-square independence test are:

1. Cell size assumption

   Chi-square can be used to determine differences in proportions by using a R*C contingency table. This test works well when datasets are large enough. When cell sizes are small, e.g., more than 20% of the cells in the contingency table have expected values lower than 5, another test maybe more appropriate such as the Fisher's exact test (McHugh, 2013).

2. Independence assumption

   The chi – square test cannot be used with correlated data/or on paired samples. This means a different test must be used if the two groups of data are related (McHugh, 2013). Therefore, the cells in the contingency table must be independent of each other.

Assumption one, cell size, is met because each cell in the crosstab Table 17 has an expected frequency of more than five. Assumption number two is met because the 142 total responses from participants are independent, i.e., they completed their surveys independently of each other. More so, the p - value of .377 in Table 19 is more than the determined significance level of (α=.05). Therefore, the findings fail to reject the null hypothesis (Ho*), the Leadership styles, (TFL and TRL) are independent of gender*, because the p - value of .377 is not less than the (α=.05) significance level. Therefore, one can conclude at the (α=.05) level of significance that the leadership styles, (TFL and TRL), are independent of gender.

Next, geographical regions were tested to determine if they are dependent upon lab administrator's leadership style. Because the two expected count values are lower than 5 for geographical regions, the Fisher's exact test p-value was used in the contingency table, rather than the Chi – Square p – value (McHugh, 2013; Table 21)

Table 20 shows that of the 142 surveyed lab administrators who perceive themselves as TFL leaders and TRL leaders, most work in the South.

Table 20

Contingency Table for Leadership Styles and Geographical Regions

Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL) * Regions Crosstabulation

			Regions				Total
			Mid west	North east	South	West	
Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	TFL	Count	41	11	49	22	123
		Expected Count	39.8	10.4	50.2	22.5	123.0
	TRL	Count	5	1	9	4	19
		Expected Count	6.2	1.6	7.8	3.5	19.0
Total		Count	46	12	58	26	142
		Expected Count	46.0	12.0	58.0	26.0	142.0

Contingency table for Leadership Styles and Geographical Regions. Table contains the count and expected count of lab administrators' with leadership styles, (TFL and TRL), from the four regions of the United States (Midwest, North east, South, and West). Because there are two expected count values lower than 5 for geographical regions, the Fisher's exact test p-value was used in the contingency Table 16, rather than the Chi – Square p – value.

Table 21 shows the Fisher exact test p – value, .885, which was used because two cells in the table had an expected count lower than five.

Table 21

Fisher's Exact Test for Leadership Styles and Geographical Regions

Chi – Square Tests			
	Value	df	Exact Sig (2- sided)
Pearson Chi – Square (x^2)	.833[a]	3	.845
Fisher's Exact Test	.762	3	.885
N of Valid Cases	142		

a. 2 cells (25.0%) have expected counts less than 5. The minimum expected count is 1.61.

Fisher's Exact Test for Leadership Styles and Regions. Two cells in the contingency table have expected counts lower than five, as well as, a very low distribution of samples for TRL, providing validation to use the Fisher's exact test's p - value, which is typically used on smaller data sets (McHugh, 2013).

Because it is greater than the significance level of (α=.05), the Fisher's exact test's p - value, .885, indicates that regions are independent of TFL and TRL leadership styles. As with the geographical regions, there is a low distribution of values in ages shown in Table 22; therefore, the Fisher's exact test's p - value is used in the contingency table for

leadership and lab administrator's age (*see* Table 23). Using the Fisher's exact test p - value of each age range shows the p - values are more than the (α=.05) significance level. Therefore, lab administrators' age is independent of their leadership style.

Table 22

Contingency Table for Leadership Styles and Lab Administrators' Age

Tranformational Leadership Style (TFL) and Transactional Leadership Style (TRL) * Lab Administrators' Ages Crosstabulation

			Lab Administrators' Ages					
			25-34	35-44	45-54	55-64	65 and above	Total
Tranformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	TFL	Count	10	22	38	47	6	123
		Expected Count	12.1	20.8	36.4	46.8	6.9	123.0
		% within Tranformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	8.1%	17.9%	30.9%	38.2%	4.9%	100.0%
		% within Lab Administrators' Ages	71.4%	91.7%	90.5%	87.0%	75.0%	86.6%
		% of Total	7.0%	15.5%	26.8%	33.1%	4.2%	86.6%
	TRL	Count	4	2	4	7	2	19
		Expected Count	1.9	3.2	5.6	7.2	1.1	19.0
		% within Tranformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	21.1%	10.5%	21.1%	36.8%	10.5%	100.0%
		% within Lab Administrators' Ages	28.6%	8.3%	9.5%	13.0%	25.0%	13.4%
		% of Total	2.8%	1.4%	2.8%	4.9%	1.4%	13.4%
Total		Count	14	24	42	54	8	142
		Expected Count	14.0	24.0	42.0	54.0	8.0	142.0
		% within Tranformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	9.9%	16.9%	29.6%	38.0%	5.6%	100.0%
		% within Lab Administrators' Ages	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	9.9%	16.9%	29.6%	38.0%	5.6%	100.0%

Contingency Table for Leadership Styles and Lab Administrators Age. Table contains the count and expected count of lab administrators' with leadership styles, (TFL and TRL), from specific age groups. Majority of lab administrators are between the ages of 55 - 64.

The Fisher's exact test output below indicates that lab administrators' ages are not statistically significant at the (α=.05) significance level.

Table 23

Fisher's Exact Test for Leadership Styles and Lab Administrators' Age

Chi-Square Tests			
	Value	df	Exact Sig (2- sided)
Pearson Chi-Square	4.794[a]	4	.305
Fisher's Exact Test	4.764	4	.271
N of Valid Cases	142		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.07.

Fisher's exact test for leadership styles and lab administrators' age. The Fisher's exact test p - value is .271, which is more than (α=.05). Therefore, age is independent of TFL and TRL leadership styles.

In summary, leadership style was found to be independent of gender, geographical region, or age after using a series of Chi – square contingency tables and p - values. The next analysis investigates '*Of the (13) hospitals that were correlated, in this study, is there a statistically significant relationship between the responses from the lab administrators and their HR personnel*?'

The hypotheses for research Q2 are listed below:

Ho: There is no statistically significant relationship between the responses from the lab administrators and their HR personnel?

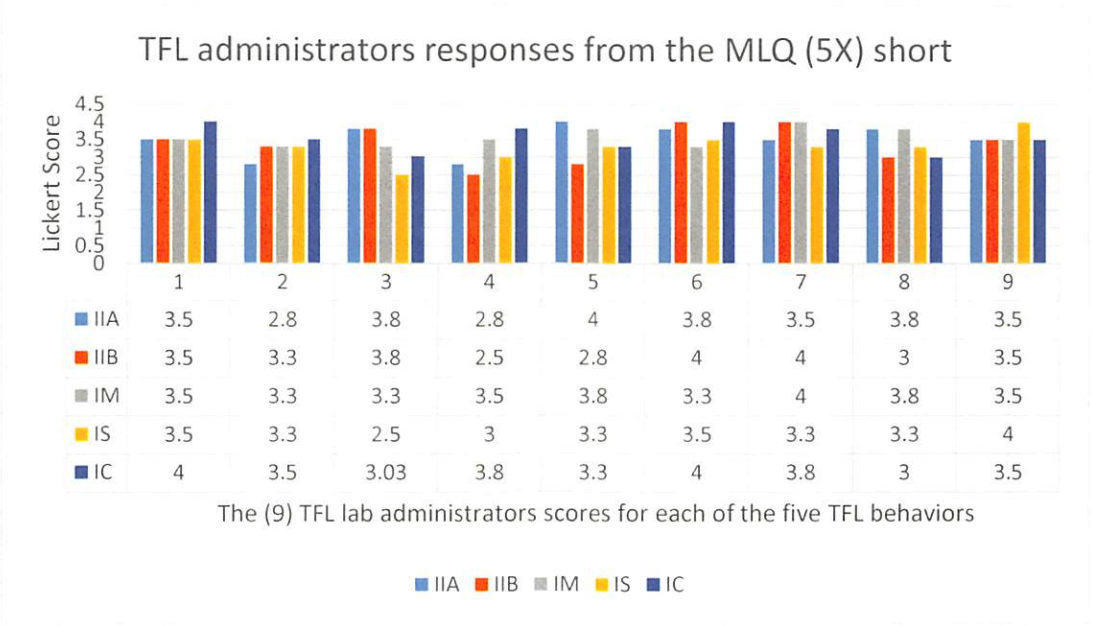
H1: There is a statistically significant relationship between the responses from the lab administrators and their HR personnel?

Correlations will be used to determine if a relationship exist between the perceptions of lab administrators' behaviors by the administrators and their HR representatives by using their average response scores to the MLQ (5X short) and OCAI surveys.

The thirteen average HR scores were obtained from the OCAI survey by taking the average score of the (6) culture dimensions: dominant characteristics (DC), organizational leadership (OL), management of employees (ME), organizational glue (OG), strategic emphasis (SE), and criteria for success (CS) for each hospital's HR personnel. The 13 average scores for TFL and TRL were obtained from the MLQ (5X short) by taking the average score of the TFL leadership behaviors: Idealized Influence Attributes (IIA), Idealized Influence Behaviors (IIB), Inspirational Motivation (IM), Intellectual Stimulation (IS), and Individualized Consideration (IC), and the TRL leadership behaviors: Contingent rewards (CR) and Management by Exception Active (MBEA) from each hospital's lab administrators survey results, correlated with their HR survey results, using the four digit codes that were used to link the two results.

Bar graphs were first created in Figure 8.0 and Figure 9.0 to provide a visual comparison and investigate a possible relationship between the responses. Particularly responses from lab administrators, who scored higher in transformational leadership than transactional leadership, engaging in Individualized Consideration (IC) behavior and their HR personnel responses on Organizational Leadership (OL), and from lab administrators, who scored higher in transactional leadership than transformational leadership, engaging in Contingent Reward (CR) and their HR personnel responses on Management of Employees (ME). There were no obvious relationship between lab administrators' perceptions and HR representatives' perceptions. The two groups have different mean scores, the (9) transformational leaders have a different mean scores compare to their HR

personnel mean scores in mentoring and energizing employees, and the (4) transactional leaders have different mean scores than their HR personnel in rewarding their employees. However, interpreting a relationship using bar graphs can be subjective; therefore, correlation coefficients were calculated using the Spearman's rho correlation coefficient (r_s) to measure the strength and degree of correlation between lab administrators mean scores and HR mean scores (Farber & Larson, 2009).



	1	2	3	4	5	6	7	8	9
IIA	3.5	2.8	3.8	2.8	4	3.8	3.5	3.8	3.5
IIB	3.5	3.3	3.8	2.5	2.8	4	4	3	3.5
IM	3.5	3.3	3.3	3.5	3.8	3.3	4	3.8	3.5
IS	3.5	3.3	2.5	3	3.3	3.5	3.3	3.3	4
IC	4	3.5	3.03	3.8	3.3	4	3.8	3	3.5

The (9) TFL lab administrators scores for each of the five TFL behaviors

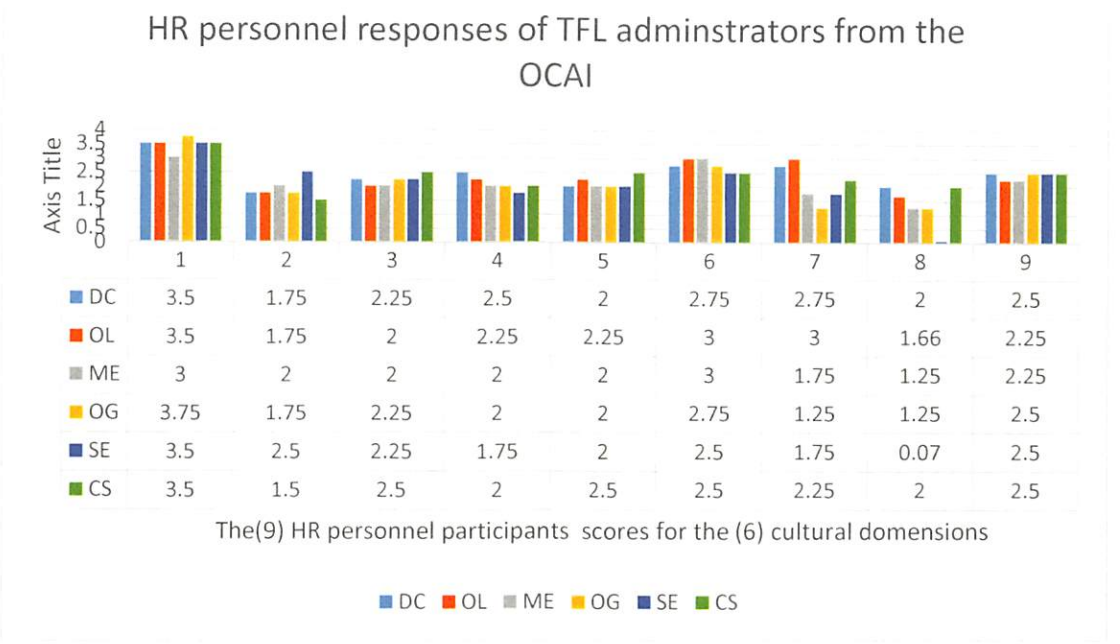
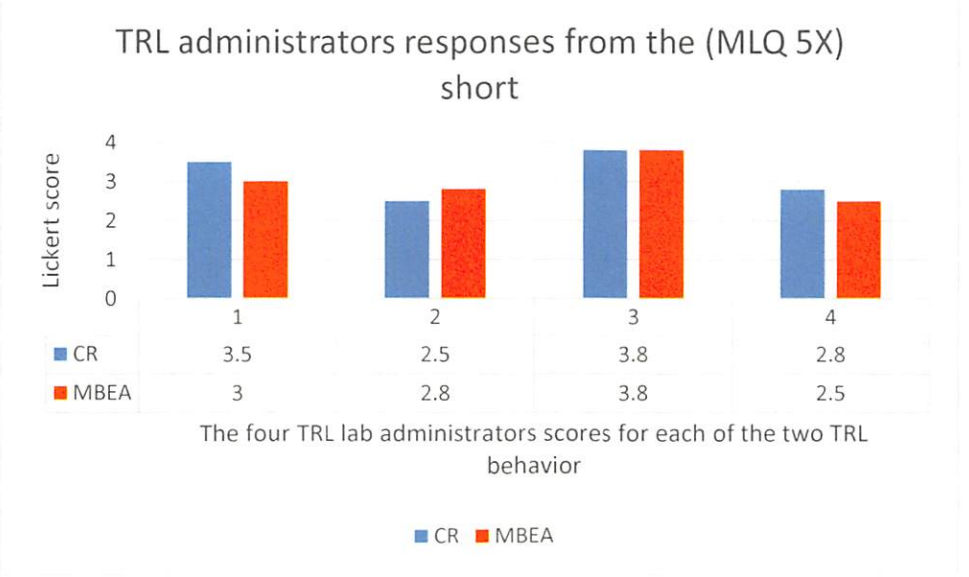


Figure 8.0 Means from the (9) lab administrators, who scored higher in transformational behaviors, and their HR personnel.



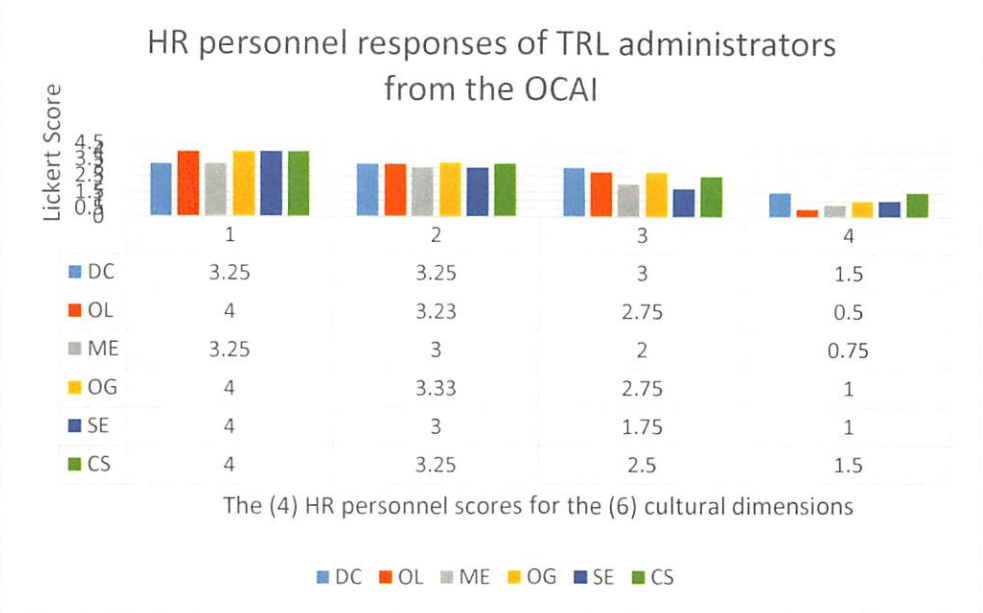


Figure 9.0. Means from lab administrators, who scored higher in transactional behaviors versus transformational behaviors, and their HR personnel.

The Spearman's correlation p - value was used versus the Pearson's correlation because the Spearman's test (r_s) test is used when assessing a relationship between two ordinal data (Hauke & Kossowski, 2011; Mukaka, 2012). In addition, Pearson's correlation requires the variables to be measured on an interval or ratio level as well as there should be no evidence of outliers. The variables in this study are measured on an ordinal scale as well as there are outliers (Bar graphs are bimodal symmetric). Moreover, with interval data one would be able to obtain differences in data. Taking the difference of the data value would be meaningless on a 5 - Likert point scale, because the difference between 4 and 5 is not necessary the same difference as the difference between a 2 and a 1, the values represent order (Jamieson, 2004). Before the data can be analyzed, the following assumptions must be met for the Spearman's correlation:

1. At least two variables should be measured on an ordinal, interval, or ratio scale.
2. A monotonic relationship is needed between the two variables. For example, when one variable increases the other variable decreases, or variables increases in value together.

The assumptions are met in this study:

- Assumption one is met because the MLQ (5x short) and OCAI surveys are on a Likert – like response scale, from'0' being 'not at all' to '4' being 'frequently, if not always' and are ordinal data.
- Assumption two is met by creating bar graphs in Figures 8.0 and 9.0 showing a bimodal symmetric relationship, but a weak monotonic correlation (*see Figures 8.0 and 9.0*).

Similar to Pearson's correlation, the closer the r_s is to +/or= to 1, the stronger the monotonic correlation (Farber & Larson, 2009). The following guide is an indicator for strength in correlation.

.00 - .19 "very weak"
.20 - .39 "weak"
.40 - .59 "moderate"
.60 - .79 "strong"
.80 - 1.0 "very strong"

Pfeffer, J. (2005). Producing sustainable competition advantage. *The Academy of Management Executive,* 19(4), 95- 100.

The resulting analysis in the table below shows the Spearman's correlation (r_s) taken from the SPSS output (*see List of Tables* Table 25).

Table 25

Spearman's Correlations Summary Table

		Average HR Scores
Average TFL Scores of Lab Administrators	Correlation Coefficient (r_s)	0.216
	Sig.(2 - tailed) p -value	0.478

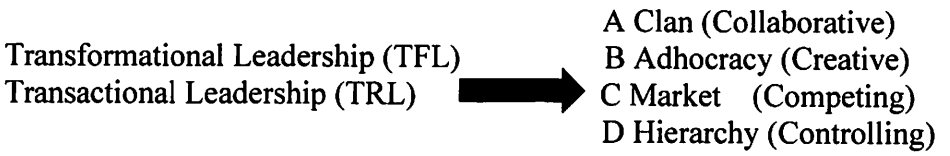
	Correlation Coefficient (r_s)	0.383
Average TRL Scores of Lab Administrators	Sig.(2 - tailed) p-value	0.196

Spearman's correlation summary table. The summary is from the Spearman's pairwise comparison table (*see list of Tables* Table 24) based on the correlation coefficients (r_s), .216 and .383, shows a somewhat weak positive correlation of HR responses to lab administrators' responses.

The Spearman's correlation coefficient, r_s, for the TFL scores and HR scores is .216 and for the TRL scores and HR scores is .383. The r_s, values of .216 and .383 are weak relations. Moreover, the p - values of .478 and .196 in the table are not statistically significant at the (α=.05) significance level. Thus, the findings fail to reject the null hypothesis, *there is no statistically significant relationship between the responses from the lab administrators and their HR personnel;* based on the hypothesis test the evidence implies that the responses to the MLQ (5X short) and OCAI are similar.

The next research questions explores the two leadership styles TFL and TRL as predictors for the (13) hospital laboratories on the (4) culture types. Leadership styles were coded as 0 = TFL and 1 = TRL. The research question asks are leadership styles, TFL and TRL, statistically significant to any of the (4) culture types.

(4) Dominant Culture Types
(Independent) (Dependent)



Multivariate multiple regression was used to ascertain a significant relationship of one or both leadership style on the four culture types simultaneously. The data was tested and the following assumptions were analyzed for the (4) mulvariate multiple regression equations, one equation for each culture type.

The assumptions are:

1. The dependent variables are multivariate normally distributed with each group of the categorical variables.
2. Homogeneity of covariance matrices, the population of each group are equal.
3. Each dependent variable are correlated
4. Data are randomly and independently sampled from the population

Table 26 shows the sample size N= 13 and how the categorical groups in the independent variable, Leadership Styles, were coded. In Table 26 the sample size is relatively small, there are 9 TFL cases and 4 TRL cases. However, the respondents in the sample size are independent, i.e. they completed their surveys independently of each other. Thus satisfying one of the assumptions for the multivariate multiple regression.

Table 26

Sample size of Leadership Styles

Between-Subjects Factors

		Value Label	N
Leadership Styles	0	TFL	9
	1	TRL	4

Sample size of Leadership Styles (Two Way/or group MANOVA). The independent grouping variable, Leadership Styles N = 13 cases, were coded as TFL= 0 and TRL= 1.

Table 27 shows the means and standard deviations of the culture types. TRL has the highest means for most of the organizational cultures. The standard deviations for the culture types, in exception to hierarchy, are not that similar and may indicate that there is no homogeneity across covariance, meaning the two leadership styles change as the culture types change (Farber & Larson 2009).

Table 27

Descriptive Statistics of Data

Descriptive Statistics

	Leadership Styles	Mean	Std. Deviation	N
Clan	TFL	2.6111	.95997	9
	TRL	3.1250	1.43614	4
	Total	2.7692	1.09129	13
Adhocracy	TFL	2.0511	.65137	9
	TRL	1.7500	1.32288	4
	Total	1.9585	.86098	13
Market	TFL	1.9622	.84043	9
	TRL	2.2500	1.46944	4
	Total	2.0508	1.01479	13
Hierarchy	TFL	2.5478	.75110	9
	TRL	3.3750	.64169	4
	Total	2.8023	.79809	13

Descriptive Statistics of Data. The hierarchy culture of leadership styles may indicate homogeneity of covariance matrices, thus the change in this culture type will be the same for the two leadership style.

Table 24 is the MANOVA F-test analysis (Two-way MANOVA, e.g. TFL and TRL compare to the four culture types) for leadership style showing the four multivariate tests', Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root, p-values for the leadership styles. Note: When have just two groups the results in this table will be the same (Farber & Larson, 2009). This test looks at the four dependent variables, culture types, as a group versus separately. The hypothesis being tested by the Multivariate regression is that there is a *joint* linear effect of the two leadership styles on the (4) culture types which are conceptually related; thus satisfying the assumption that dependent variables are correlated.

Table 28

Four Different Multivariate Tests (Two – Way MANOVA analysis)Multivariate Tests

	F	Sig	Partial Eta Squared
Pillai'sTrace	2.383	.138	.544
Wilks' Lambda	2.383	.138	.544
Hotelling's Trace	2.383	.138	.544
Roy's Largest Root	2.383	.138	.544

H_0: All Betas (variables) are equal to zero

H_1: At least on variable in the regression equation is different from the others

Based on the (4) different multivariate tests, there is not a significant effect of the two leadership styles on the combined culture types. The multivariate test is not significant; therefore, the null hypothesis fail to be rejected that leadership styles are the same across all culture types. However, the F – test is only part of the analysis to determine if the model is adequate in making predictions. The Partial Eta Squared in the Multivariate tests table is use in conjunction with the F – statistic to test the hypotheses. The Partial Eta Squared value is .544, is an adequate model in making predictions, indicating that 54% of the variation in data can be explained by the relationship between leadership styles and

the (4) culture types. Next the four dependent variables, culture types, will be analyzed individually using one way ANOVA's.

Table 29, the Levene's test of equality, shows that across all (4) dependent variables that the assumption of homogeneity, the p – values are more than the (α=.05) significance level, is satisfied at the univariate level.

Table 29

Levene's Test of Equality

Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
Clan	.798	1	11	.391
Adhocracy	3.201	1	11	.101
Market	1.803	1	11	.206
Hierarchy	.002	1	11	.970

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Leadership_Styles

Levene's Test of Equality. The homogeneity variance among covariance assumption across all (4) dependent variables are satisfied at a univariate (one – way) level.

The MANOVA analysis is follow up with one way ANOVA's, looking at each individual dependent variables separately in Table 30.

Table 30

Separate ANOVA's			
Dependent Variables	df	F	Sig
Clan	1	.593	.457
Adhocracy	1	.320	.583

Market	1	.208	.657
Hierarchy	1	3.626	.083

Separate ANOVA's. Table shows a series of four separate ANOVA's.

Table 26 shows no significant differences across all four dependent variables as well as the TFL p- value is not statistically significant or the TRL p-value. However, Hierarchy culture is close to the level of significance with the p – value of (p – value =.083). Yet when looking at the two leadership styles, TFL and TRL, separately there are no statistically differences (*see* Table 31)

Table 31

TFL and TRL individual effects on culture types

Source	Dependent Variable	df	F	Sig
TFL leadership	Clan	1	.036	.853
	Adhocracy	1	.389	.547
	Market	1	.037	.852
	Hierarchy	1	.969	.348
TRL leadership	Clan	1	1.888	.199
	Adhocracy	1	.411	.536
	Market	1	.281	.608
	Hierarchy	1	.062	.808

TFL and TRL individual effects on culture types. There are no statistically differences of the two leadership styles, TFL and TRL, on any of the four culture types.

In summary, there was not a significant difference between leadership styles when considered jointly on the culture type variables, Pillai's Trace p – value = .138. When a separate ANOVA was conducted for each dependent variable, the four culture types, with each ANOVA evaluated at the (α=.05) significance level the one way ANOVA showed

that the hierarchy culture was close to the level of significance with a p – value of .083. However, there were no significance differences for the individual leadership styles, TFL and TRL on the culture types.

Because of the small sample size, (13) observations, and not enough degrees of freedom (df), the test performed for research question, *Q4*, was a series of multiple linear regression analyses using categorical variables to explain one quantitative dependent variable, the number of laboratory turnover positions. The multiple independent variables were converted into dummy variables, coded as 0 =otherwise and 1 = X, because the independent variables are categorical and needed to be in a numerical form that could be computed by regression analysis. Question *Q4* ask are the differences in turnover numbers due to any of the categorical factors; work cultures, leadership styles, and lab administrators' age.

Research Question 3

Q4: Which factors, if any, affect the dependent variable, the number of laboratory turnover positions?

(3) Independent Variables:

1. Work cultures: Clan, Adhocracy, Market, Hierarchy
2. Managerial leadership styles: Transformational or Transactional
3. Lab Administrators' Ages

A series of multiple linear regressions were performed and assumptions tested with the predictor variables entered using the 'Enter' method and the number of laboratory

turnover positions entered as the dependent variable. The 'Enter' method forces all variables in the model irrespective of statistical significance. Below is the first SPSS output for the impact of culture on the number of laboratory turnover positions.

Table 32
Culture Variables in the Model

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Hierarchy, Market[b]	.	Enter

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. All requested variables entered.

Culture Variables in the Model Table 29 shows which culture variables were included in the model using the 'Enter' method in reference to the clan culture. Adhocracy not included in the model because no one of the (13) HR participants reported adhocracy as their lab's cultural type.

Table 33

Model Summary of Predictor Variables Variation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.304[a]	.092	-.089	74.400	2.394

a. Predictors: (Constant), Hierarchy, Market

b. Dependent Variable: Actual Count in Numbers of Turnover positions

Model Summary of Predictor Variables Variation. R^2 shows the percent of variability in the data. The foot note states which variables, Hierarchy and Market, were included. With these variables, 9.2% of the variance was accounted. Generally, the higher the R^2 the better the model fits the data. Moreover, the Durbin-Watson test is close to the value 2, indicating no autocorrelation, thus satisfying one of the assumptions for multiple linear regression.

Table 34

Full Diagnostic ANOVA Model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5625.974	2	2812.987	.508	.616[b]
	Residual	55354.333	10	5535.433		
	Total	60980.308	12			

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. Predictors: (Constant), Hierarchy, Market

Full Diagnostic ANOVA Model. The F- tests is used to determine if the model is a good fit for the data according to the p – value. The model does not have statistically significant results, p value =.616 for the hierarchy and market variables.

Table 35

Regression Equation Table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	11.500	30.374		.379	.713		
	Market	-6.500	80.362	-.025	-.081	.937	.929	1.077
	Hierarchy	40.667	42.955	.296	.947	.366	.929	1.077

a. Dependent Variable: Actual Count in Numbers of Turnover positions

Regression equation table. Based on the Beta coefficients, one for each predictor, Market (β= -6.500) reduces turnover as it relates to the clan culture and Hierarchy (β= 41) increases turnover as it relates to the clan culture. There is no statistical significance of cultural types on the number of turn over positions. However, the variance inflation factor (VIF) in the table is equal to one, indicating that market and

hierarchy are not correlated and there is no multicollinearity. The regression coefficients are adequately estimated and the no multicollinearity assumption is satisfied.

Next is the SPSS output for the impact of leadership styles, TFL and TRL, on the number of laboratory turnover positions.

Table 36

Leadership Style Variable in the Model

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	TRL[b]	.	Enter

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. Tolerance = .000 limit reached.

Leadership Style Variables in the Model. Table 36 shows which leadership styles variable, Transactional leadership style TRL, was included in the model using the 'Enter' method. Transformational leadership style, TFL, was excluded from the model.

Table 37

Model Summary of Predictor Variable Variation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.171[a]	.029	-.059	73.365	2.231

a. Predictors: (Constant), TRL

b. Dependent Variable: Actual Count in Numbers of Turnover positions

Model Summary of Predictor Variables Variation. R^2 shows the percent of variability in the data. The foot note states which variable, TRL, was included. With this variable, 2.9% of the variance was accounted. Moreover, the Durbin-Watson test is close to the value 2, indicating no autocorrelation, thus satisfying one of the assumptions for multiple linear regression.

Table 38

Full Diagnostic ANOVA Model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1773.335	1	1773.335	.329	.578[b]
	Residual	59206.972	11	5382.452		
	Total	60980.308	12			

a. Dependent Variable: Actual Count in Numbers of Turnover positions
b. Predictors: (Constant), TRL

Full Diagnostic ANOVA Model. The F- tests is used to determine if the model is a good fit for the data according to the p – value. The model does not have a significant result, p value =.578 for the Transactional leadership style.

Table 39

Beta Coefficient Table

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	37.556	24.455		1.536	.153		
	TRL	-25.306	44.087	-.171	-.574	.578	1.000	1.000

a. Dependent Variable: Actual Count in Numbers of Turnover positions

Regression equation table. Based on the Beta coefficients, one for each predictor, Transactional (β= -25.306) reduces turnover.

Table 40

Variables Excluded in Model

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	TFL	.[b]	.	.	.	.000	.	.000

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. Predictors in the Model: (Constant), TRL

Next series of table is the SPSS output showing the impact of the four age groups on the number of laboratory turnover positions.

Table 41

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Agegroup5, Agegroup2, Agegroup4, Agegroup3[b]	.	Enter

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. All requested variables entered.

Table 42

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.752[a]	.566	.349	57.512	1.852

a. Predictors: (Constant), Agegroup5, Agegroup2, Agegroup4, Agegroup3

b. Dependent Variable: Actual Count in Numbers of Turnover positions

Table 43

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34519.558	4	8629.889	2.609	.116[b]
	Residual	26460.750	8	3307.594		
	Total	60980.308	12			

a. Dependent Variable: Actual Count in Numbers of Turnover positions

b. Predictors: (Constant), Agegroup5, Agegroup2, Agegroup4, Agegroup3

Table 44

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	7.500	40.667		.184	.858		
	Agegroup2	-5.500	70.437	-.021	-.078	.940	.722	1.385
	Agegroup3	-.750	49.807	-.005	-.015	.988	.481	2.077
	Agegroup4	3.000	49.807	.020	.060	.953	.481	2.077
	Agegroup5	143.000	57.512	.753	2.486	.038	.591	1.692

a. Dependent Variable: Actual Count in Numbers of Turnover positions

Regression equation table. Based on the Beta coefficients, one for each predictor variables, turnover increases as one's goes up in age. The older age group, 65 and older, has a statically significant p-value .038. The equation for the regression line is: Predicted turnover numbers = 7.500 + 143.000 (Age group 5)

CHAPTER V
DISCUSSION

Discussion of Results

The descriptive statistical findings showed that as a group, lab administrators reported engaging in behaviors in Individualized Consideration (IC) (M=3.3,SD= 0.5), a transformational behavior and Contingent Reward (M=3.2,SD=0.6) , a transactional behavior, more than any other TFL and TRL behaviors. This supports previous research that a leader can demonstrate more than one leadership style, and that TFL and TRL can be complementary to each other versus polar opposites (Lowe, Kroeck, & Sivasubramium, 1996). Engaging in more than one type of behaviors, especially Individualized Consideration, and Contingent Reward, are important when maintaining personnel because leaders who engage in Individualized Consideration pay close attention to individual employees' needs and motivations versus treating all individuals the same. Such behaviors also developed organizational cultures that encourages risk taking, innovation, and individual development. Which are characteristics of an adhocracy and a market culture (Bass & Avolio, 2004; Cameron & Quinn, 2011; Schein, 2004). Note that the surveyed HR personnel in this study reported adhocracy to be the dominant characteristics for the culture dimension (43.7%), management of employees (ME). Contingent Reward can enhance those qualities, by leaders rewarding employees with tangible methods for their work efforts.

Even though lab administrators reported high scores in engaging in Contingent Reward behaviors, according to the MLQ (5X short) demographic questionnaire results, only a small number reported in using a retention method to retain staff. Of the N = 142 surveyed lab administrators 38%, reported using/ or implementing some type of retention method in their labs, that leaves 62% of those who are not currently using a retention method in their departments. The differences may be because there are different types of rewards, intrinsic and extrinsic, for motivating employees. Lab administrators who reported engaging in mentoring and providing supportive work cultures, may use extrinsic behaviors versus monetary benefits (24%) as their main retention strategy. These extrinsic rewards have been most preferred by employees and linked to effective retention and job satisfaction (Nujjo & Myers, 2012). This strategy may be useful in retaining certain lab personnel, specifically phlebotomists, who are the least paid compare to other lab personnel and has the most interactions with patients and clinicians (ASCP, 2013). Moreover, has the highest voluntary turnover numbers in this study (200 or more in certain regions).

The inferential statistical findings in this study showed that lab administrators, independent of gender (p-value .779), follow a transformational leadership style and reported engaging in more transformational behaviors (N=123) than transactional behaviors (N=19). In most management studies, irrespective of gender, managers are prone to be more transformational than transactional (Eagley, 2013; Kent, Blair, Rudd, & Schueli, 2010; Patel, 2013; Xiaoxia, Xiaoxia, & Jing, 2006).Therefore, knowing that a particular individual is male or female in this study would not be a reliable indicator of that individual's leadership style. Historically, the proportion of women in medical lab

jobs have been between 80 – 90% over the past decades up to the year of 2000. Such findings are important when considering majority of lab administrators in this survey were women (N= 84, 59%). In the last decade, more men (almost a third of the job growth) have been entering many healthcare fields that have been previously dominated by females (Langille, 2014).

Although there were no significant explanation about how certain demographic traits impact leadership styles in this study, lab administrators' age, Age group 5 (65 and older) seemed to explain the hospital laboratories turnover numbers with a statistically significant p - value of (.038) and a percentage of variation of (R^2 = 57%).

The paper also attempted to demonstrate the relationship between leadership and culture by examining the impact of TFL and TRL leadership styles on the four culture types. Studies have cited that cultures are often dependent on leadership (Ogbonna & Harris, 2000; Schein, 2004). The results of the study indicate that hierarchy culture (control) may be closely related to leadership styles (p - value .083). Interestingly, lab cultures have most often been characterized in literature as procedure guided, structured, and fast – pace environment (Borchardt, 2013;Blau, 1999; Clark, 2008). This description is most consistent with hierarchy as well as an adhocracy culture. However, there were no differences when individual one way ANOVAs was used to determine the impact of each leadership style, TFL and TRL, on each of the four culture types. It should be noted, that for the MANOVA analysis that was used to test the hypothesis of leadership styles and cultures, violations occurred when testing for the assumption for homogeneity of covariance matrices.

Implications:

This study examined the association among the three concepts, leadership, culture and retention based on the conceptual model presented in Chapter I. However, the research offers no evidence that suggests that leader behavior and work characteristics influence the survey hospital laboratories turnover numbers. Some of the reasons for this may be attributed to: a) low response rates b) few observations to perform some statistical analyses, and c) various interpretations from the researcher of what type of data, i.e. ordinal versus interval was being measured.

A low response rate perhaps did not provide a true representation of the sample and likely impacted the results in this study. It is difficult to obtain valid and accurate measures of human behavior and performances, but even more so with low responses (Creswell, 2008). Small sample size and low response rate can introduce error when performing statistical analysis (Sullivan & DeLuca, 2010). Also, having a small sample size for this study, made it difficult to assure for adequate power to detect statistical significance. With (13) observations, too few degrees of freedom, individual regression analyses had to be performed for all the factors. Furthermore, some researchers have debated about treating ordinal data as interval data citing that the resultant scales score from Likert – like surveys, once averages are calculated and fractional numbers are produced, is the actual measurement that is being analyzed, and it is measured on a continuous measurement scale, therefore, the measurements meets the assumptions of using parametric tests such as Pearson's versus Spearman's (Cliff, 1996; Michell, 2008). Other researchers contend that modes not means are appropriate values to obtain from Lickert surveys.

Even though the leadership/culture model on retention could not be statistically proven, this study may give some contribution to understanding that gender does not have an important impact on leadership style, leadership styles are best suited to different situations, future studies on lab administrators as they approach retirement age as well as the future of hospitals having in – house laboratory departments. The research also provided some insights on laboratory administrators' leadership styles in hospital laboratories. Moreover, the study indicates the value of a strong relationship between HR and their department manager.

Recommendations for future research

Recommendation 1:

Researcher selected a quantitative approach in order to make the results reliable and scientific. Perhaps a qualitative approach may have created a deeper understanding of the effects of leadership and culture on retention. Moreover, the researcher should have utilized ASCP's existing surveys and respondent database because ASCP have been conducting surveys of the laboratory workforce for a number of years and therefore the researcher would have been able to use longitudinal data.

Recommendation 2:

Use the MLQ (5X short) rater and self- report survey to obtain perceptions from employees as well as lab administrators in order to examine the opinions of lab administrators as well as their employees regarding leadership behaviors.

Recommendation 4:

As a final recommendation, it is recommended that this study be replicated as well as new studies incorporating stepwise regression and a larger sample size with the same purpose in order to understand the relationship of leadership and culture on retention and what variable predicts what outcome.

Summary

The purpose of this study was to investigate the relationship between lab administrators' behaviors and the labs' work culture and the impact the relationship has on laboratory turnover numbers. The data collection utilized demographic questionnaires to obtain descriptive statistics about the participants including lab administrators' age,

gender, job titles, and the number of turnover positions in their labs. The MLQ (5X short) measured specific leadership styles, transformational and transactional leadership, and the OCAI instrument measured the (4) culture types, clan, adhocracy, market, and hierarchy. Data was collected from 200 usable responses. A summary of descriptive statistics yielded the following composite picture of a lab administrator, the representative lab administrator most often a female (59%), 55- 64, years of age, working in a mid - volume laboratory. According to the MLQ (5X short) survey, lab administrators perceive themselves more of a transformational leader versus a transactional leader, and according to the OCAI survey results, high turnover in phlebotomy (average 12 per year), and the management style of employees is sometimes perceived by HR representatives of the lab as fairly often as predictable with stable relationships (41.07%), frequently, if not always wants teamwork, consensus, and participation (35.71%). In order to assess the research questions in Chapter I, Chi – Square goodness – of – fit independence test, Spearman's rho correlation coefficient, multivariate, and multiple regression were used. Table 45 summarizes the hypotheses proposed in Chapter III and states whether they have been accepted or rejected after analysis of data. Overall, it could not be concluded that the concept of leadership and organizational culture has an impact on retention.

Table 45

Hypotheses Summary Table

H1	Description	Results
H1 - Q1	Leadership style, (TFL and TRL), depends on gender	Not supported
H1- Q2	There is a significant association between the two set off variables, average TFL scores vs. average HR scores and average TRL scores vs. average HR scores.	Not supported
	There is a significant test differences between the two set off variables, average TFL scores vs. average HR scores and average TRL scores vs. average HR scores	Supported
H1 – Q3	There is an association between culture types and leadership behaviors	Not supported
H1-Q4	At least one variable in the regression equation is different from the others.	Not supported
H1-Q5	At least one variable in the regression equation is different from the others.	Not supported

Hypotheses Summary. Table contains the hypotheses tested in the dissertation.

List of References

Al – Enezi, N., Shah, M., Chowdhury, R., & Ahmad, A. (2008). Medical laboratory science graduates: Are they satisfied at work? *Education for Health* 21(2), 1 – 11.

American Society of Clinical Pathology, Task Force on the Laboratory Professionals Workforce. (2013). *Building a Laboratory Workforce to meet the Future.* Retrieved from http://www.ascp.org/PDF/Advocacy/ASCP-Task-Force-on-Lab-Pros.pdf

Avery, G., Lee, J., & Falk, S. (2004). *Assessment of cultural variation in medical laboratories* (Research Report No.U47/CCU617550-2). Retrieved from http:// citeseerx.ist.psu.edu/viewdoc/download?

Bamberg, R., Akroyd, D., & Moore, T. (2008). Factors that impact clinical laboratory scienctists' commitment to their work organizations. *Clinical Laboratory Science,* 21(3), 167 – 178.

Bass, B. & Avolio, B. (2004). *Multifactor leadership questionnaire manual and sample set* (3rd ed.). Redwood City, CA: Mind Garden, Inc.

Battisto, D. (2002, September). Change in clinical labs in hospitals. *Implications.* Retrieved from www.informedesign.org/_news/Sept_v03r-p.pdf.

Beck, S & Doig, K. (2005). Factors contributing to the retention of clinical laboratory personnel. *Clinical Laboratory Science,* 18(1), 16 – 27.

Beck, S. & Doig, K. (2007). Are new CLS practitioners prepared to stay? *Clinical Laboratory Science,* 20(3), 161 – 171.

Bennett, A., Thompson, N., Holladay, B., Bugbee, A., Steward, C. (2009). ASCP wage and vacancy survey of U.S. Medical laboratories [Electronic version]. *American Society of Clinical Pathology*, 40(3), 133 – 141.

Bianpoen, C. (2011, August 07). Uniform, the marking or dissolving of identity? *Jakarta Post,* Retrieved from www.thejakartapost.com/news/2011/08/07/uniform-the-marking-or- dissolving-identity.html.

Blau, G. (1999). Early – career job factors influencing the professional commitment of medical technologists. *Academy of Management*, 42(6), 687 – 695.

Blau, G., Tatum, D., & Ward – Cook, K. (2003). Correlates the work exhaustion for medical technologists. *Journal of Allied Health*, 32(3), 148 – 157.

Borchardt, J. (2013). Quit micromanaging! *Lab Manager*, 8(3), 24 - 26.

Bormann, L. (2011). *The relationship between staff nurse perception of nurse manager leadership behavior and staff nurse job satisfaction in a hospital applying for magnet*

recognition status (Unpublished master's thesis). University of Louisville, Western Kentucky.

Bragan, S. (2010). The lab technician: A valuable stepping stone. *Journal of Young Investigations (JYI),* Retrieved from legacy.jyi.org/SCC/Article.php?articleNUM=13.

Bureau of Labor Statistics, U.S. Department of Labor. (2010). Occupational outlook handbook. Retrieved from http://www.bls.gov/ooh/.

Bureau of Labor of Statistics, U.S. Department of Labor. (2012). Occupational employment statistics. Retrieved from http://www.bls.gov/oes/current/oes292011.htm#ind.

Burke, M. (2000). Laboratory medicine in the 21st century. *American Journal of Clinical Pathologist,* 114, 841 – 846.

Buttner, J. (1992). The origin of clinical laboraotories. *Journal of Clinical Chemistry Clinical Biochemistry* 30, 585 - 593.

Cameron K., & Quinn, R. (2011). *Diagnosing and changing organizational culture.* San Francisco, CA: Jossey – Bass.

Centers for Medicare and Medicaid Services (CMS). (2006). Clinical Laboratory Improvement Amendment (CLIA): How to obtain a CLIA certificate of waiver. Retrieved March 14, 2013, from www.cms.gov/Regulations.

Centers for Medicare and Medicaid Services (CMS). (2014). *Clinical Laboratory Improvement Amendment (CLIA).* Retrieved from www.cms.gov/Regulations-and – Guidance/Legislation/CLIA/CLIA-Statsitical_Tables_Graphs.html

Clark, H. (2008). *Medical laboratories professional's job satisfaction, intent to quit, and retention: A quantifiable non – experimental approach* (Doctoral dissertation). | Retrieved from ProQuet, LLC. 33310909.

Clinical lab technicians, technologists focus on results. (2013, January). *Chicago Tribune News.* Retrieved from articles.chicagotribune.com/2013-01-21/classified/chi-clinical-lab- technician- technologist-careers-20130121_1_technologists-clinical-laboratory-technicians.

Davidson, M. (2000). *Organizational climate and its influence upon performance: A study of Australian hotels in South East Queensland.* (Unpublished doctoral dissertation). Griffith University.

Delwiche, F. (2003). Mapping the literature of clinical laboratory science. *Journal of Medical Library Association,* 91(3); 303 – 313.

Denison, D. R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review,* 21, 619–654.

Dillman, D. (1991). The design and administration of mail surveys. *Annual Review Sociology,17,* 225-49.

Dorgham, S. (2012). Relationship between organization work climate and staff nurses organizational commitment. *Nature and Science,* 10(5) 80 – 91.

Eagley, A., Schmidt – Johannesen, M., Engen, M.(2003). Transformational, transactional and laissez – faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin,129(4),* 569 – 591. doi: 10.1037.0033-2909.129.4.569

Farber, B. & Larson, R. (2009). *Elementary Statistics: Picturing the World.* (4th ed.). Pacific Grove, CA: Duxbury Press.

Fridkin, S., Pear, S., Williamson, T., Galgiani, J., & Jarvis, W. (1996). The role of understaffing in central venous catheter – associated blood stream infections. *Infection Control Hospital Epidemiology,* 17(3), 150 – 180.

Frooman, J., Mendelson, M., & Murphy, J. (2012). Transformational and passive avoidant leadership as determinants of absenteeism. *Leadership and Organizational Development Journal, 33(5),* 147-463. doi: 10.1108/01437731211241247.

Hamtra, M., Yperen, M., Wisse, B., & Sassenberg, K. (2011). Transformational and transactional leadership styles and followers' regulatory focus. *Journal of Personnel Psychology,*10(4),182 – 188.

Hardman, B. (2011). *Teacher's perceptions of their principal's leadership style and effect of student achievement on improving and non – improving schools (*Unpublished doctoral dissertation). University of South Florida, Florida.

Hauke, J. & Kossowski, T. (2011).Comparison of values of Pearson's and Spearman's correlation coefficient on the same set of data. *Quaestiones Geographicae, 30(2),* 87 – 93, doi:10.2478/v10117-011-002-1.

Heritage, B. & Pollock, C. (2014). Validation of the organizational culture instrument. Retrieved from http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0092879

Hull, A.(2007). Teamwork, clinical research, and the development of scientific medicines in Interwar Britian. *Bulletin of History,* 8(13),569 – 592.

Hurley, R. (1995). Group culture and its effect on innovative productivity. *Journal of Engineering Technology Management, 57 – 75.*

Jamieson, S. (2004). Likert scales: How to (ab) use them. *Medical Education, (12),* 1217- 1218.

Jung, T., Scott, T., Davies, H., Bower, P., Whalley, D., McNally R., & Mannion, R. (2007). Instruments for the exploration of organizational culture, working paper. Available at http:// www.scothub.org/culture/instruments.html.

Kazi, G., Aziz, S., & Zadeh, Z. (2012). The contribution of organizational variables and its impact on job turnover and job satisfaction of employee's. *Interdisciplinary Journal of Contemporary Research in Business,* 3(10), 1067 – 1073.

Kibak, P. (2008). The worsening shortage of lab staff? What's being done to turn it around? [Electronic version]*Clinical Laboratory News*, 34(5), 1 – 4.

King, T., & Byers, J. (2007). A review of organizational culture instruments for nurse executives. *The Journal of Nursing Administration,* 37(1), 21 – 31.

Kirby, B. (2010). *The future of clinical laboratory science: A Delphi study* (Doctoral dissertation, West Virginia University). Retrieved from http://books.google.com/books?id=8s_PNyWx1DQC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Kivimaki, M., Vanhala, A., Pentti, J., Lansisalmi, H., Virtanen, M., Elovainio, M., & Vahtera, J. (2007). Team climate, intention to leave and turnover among hospital employees: Prospective cohort study. *BMC Health Services Research,* 7(170), 1- 8.

Kleinman, C. (2004). Leadership: a key strategy in staff retention. *The Journal of Continuing Education in Nursing*, 35(3),128-132.

Kouzes, J., & Posner, B. (2010). *The truth about leadership.* San Francisco, CA: Jossey - Bass.

Langille,J. (2014). Beyond gender stereotypes in the lab. *The Canadian Journal of Medical Laboratory Science (CJMLS).*Retrieved June 16, 2015 from janelangille.com/wp-content/uploads/2014/12/Gender004-copy.pdf.

Life in an automated laboratory from a technologist's point of view. (2000) [Special section]. L*aboratory Medicine*, 31(7), 369 – 374.

Linder, V., & Chapman, S. (2003). *The clinical laboratory workforce in California.* Retrieved from the University of California, San Francisco (UCSF) Center for the Health Professions website: http://futurehealth.ucsf.edu.

Locke, E. (1975). Personnel attitudes and motivation. *Annual Review of Psychology, 26, 457 – 480.*

Lowe, K., Kroeck, K., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta – analytic review of the MLQ literature. *The Leadership Quarterly, 7(3),* 385 – 415.

Lunz,M., Harmening, D.,& Castleberry,B. (1998). Defining the roles of a medical technologist. *Lab Medicine,* 26, 175-182.

Lyons, K. (2012). Institute of Medicine convenes workshop on the allied health workforce and services. *Health Policy Newsletter.* Retrieved from http://jdc.jefferson.edu/cgi/viewcontent.cgi?article=1767&context=hpn

MacIntosh, E., & Doherty, A. (2010). The influence of organizational culture on job satisfaction and intention to leave. *Sport Management Review,* 13, 106 – 117.

Malone, B. (2010). The send – out testing boom. *Clinical Laboratory News*, 36 (11) 1 – 6.

Maslow, A. (1943). A theory of human motivation. *Psychological Review*, 50, 394 – 395.

McClure, K. (2009, January). Student perceptions of the clinical laboratory science profession. *The Free Library (2009).* Retrieved May 19, 2013 from http://www.thefreelibrary.com/Student+perceptions+of+the+clinical+laboratory+science +profession.-a0231094826

McHugh, M. (2013). The chi – square test of independence. *Biomedical Medicine,23(2),*143- 149.

Meyer, J., & Allen, N. (1991). A three – component conceptualized of organizational commitment. *Human Resource Management Review,*1(1) 61 – 89.

Michel, R. (2011, January 4). Clinical laboratory technologists and technicians are among top growth jobs for next decade. *Dark Daily Clinical Pathology News and Trends. R*etrieved March 17, 2013, from http://darkdaily.com/clinical-laboratory-technologists-and- technicians-are-among-top-growth-jobs-for-next-decade-0104#axzz2NoAWIIr7.

Moore, L. & Rudd, R. (2006). Leadership styles of current extension leaders. *Journal of Agriculture Education 47(1),* 6- 16, doi:10.5032/jae.2006.01006.

Muenjohn, N., & Armstrong, A. (2008). Evaluating the structural validity of the multifactor leadership questionnaire (MLQ), capturing the leadership factors of transformational - transactional leadership. *Contemporary Management Research,* 4(1), 3 – 14.

Mukaka, M. (2012). A guide to appropriate use of correlation in medical research. *Malawi Medical Journal,24(3),*69-71. Retrieved from http://www.ncbi.nlm.nih.gov/ pmc/articles/PMC3576830/

Mullins, D. (2007). *The relationship between leadership styles and organizational culture within school of nursing* (Unpublished doctoral dissertation). Marshall University, West Virginia.

Nujjo, A.& Meyers, I. (2012). The relative importance of different types of rewards for employee motivation/commitment in South Africa. *Journal of Human Resource Management, 10(2),*442 -452.

OCAI Online.(2014). Home Page. Retrieved August 18, 2014, from OCAI Online website: www.-ocai-online.com

Ogbonna, E.& Harris, L. (2000). Leadership style, organizational culture and performance: Empirical evidence from UK companies. *International Journal of Human Resource Management, 11(4),* 766 – 788.

O'Reilly, C., Caldwell, D., Chatman, J., & Doerr, B. (1999). The promise and problems of organizational culture: CEO personality, culture, and firm performance. Retrieved from haas.berkeley.edu/faculty/paper/Chatman_CEO.pdf.

Patton, M. (2011, April 27). Retaining talent: Survey results reveal money is not the prime retention factor [Electronic version]. *ADVANCE*, 23(8), 6.

Paxton, A. (2000). Straight talk from lab survivor. *College of American Pathology Today (CAP).* Retrieved May 8, 2013, from http://www.cap.org/apps/cap.portal?_nfpb=true&cntvwrPtlt_actionOverride=%2Fportlets%2FcontentViewer%2Fshow&_windowLabel=cntvwrPtlt&cntvwrPtlt%7BactionForm.contentReference%7D=cap_today%2Ffeature_stories%2Ffeat1900.html&_state=maximized&_pageLabel=cntvwr.

Politis, J. (2004). Transformational and transactional leadership predictors of the 'stimulant' determinant to creativity in organizational work environment. *Electronic Journal of Knowledge Management, 2(2).* Retrieved June 13, 2015, from file:///C:/Users/TY/Downloads/ejkm-volume2-issue2- article46%20(1).pdf

Ramlall, S. (2004). Review of employee motivation theories and their implications for employee retention within organizations. *The Journal of American Academy of Business,* 52 – 63.

Renesch, J. (2012). The conscious organization: Prospects for a self – actualized workforce. *The Journal of Values – Based Leadership*, 5(2), 74 – 77.

Rose, R. (2006). Condition critical: American hospitals face a severe undersupply of allied health professionals. Schmidt Labor Research Center Seminar Research Series. 1 – 21.

Rothstein, W. (1979). Pathology: The evolution of a specialty in American medicine. *Medical Care*, 17 (10), 975 – 988.

Scammon, D., Tabler, J., Brunisholz, K., Gren, L., Kim, J., Tomoaia- Cotizel, A., Day, J., Farrell,T.,Waitzman, N., & Maghill,M.(2014). Organizational culture associated with provider satisfaction. *Journal of the American Board of Family Medicine, 27(2)*, 219 - 228.

Schein, E. (2004). *Organizational culture and leadership.* San Francisco, CA: Jossey Bass.

Schneider, B., Ehrhart, M., & Macey, W. (2013). Organizational climate and culture. *Annual Review Psychology,* 64, 361 – 388.

Scott, T., Mannion, R., Davies, H., & Marshall, M. (2003). The quantitative measurement of organizational culture in health care: A review of the available instruments. *Health Services Research*, 38(3), 923 – 945.

Sheridan, J. (1992). Organizational culture and employee retention. *Academy of Management Journal,* 35(5), 1036 – 1056.

Sheridan, J. (1992). Organizational culture and employee retention. *Academy of Management Journal,* 35(5), 1036 – 1056.

Small, K. (2013). *Retention strategies for medical technologists: Addressing the shortages and vacancies in the clinical laboratory* (Unpublished master's thesis). East Tennessee State University. Tennessee.

Sullivan, & Deluca(2010). Are Press Ganey statistics reliable? Retrieved June 17, 2015 http://www.epmonthly.com/archives/features/are-press-ganey-statistics-reliable/

Stuart, J. & Fenn, J. (2004). Assessment of medical technology students' perceptions of clinical site rotations and job choice criteria. *Clinical Leadership Management Review,*18(2), 100 – 106.

Suderman, J. (2012). Using the organizational culture assessment (OCAI) as a tool for new team development. *Journal of Practical Consulting*, 4(1), 52 – 58.

Trice, H., & Beyer, J. (1993). *The cultures of work organizations.* Upper Saddle River, NJ: Prentice Hall.

U.S. Government Accountability Office (GAO). (2006).*Clinical laboratory quality: CMS and survey organizations oversight should be strengthened* (GAO Publication No. 06-416). Retrieved from www.gao.gov/new.items.d06416.pdf.

Verlander, E., & Evans M. (2007). Strategies for improving employee retention. *Clinical Leadership and Management Review,* 21(2) 1 – 7.

Vroom, V. (1964). *Work and motivation.* New York: Wiley.

Waldman, J., Kelly, F., Arora, S., & Smith, H. (2010). The shocking cost of turnover in healthcare. *Health care Management Review,* 29(1), 2 – 7.

Wians, F. (2012). Clinical laboratory tests: Which, why, and what do the results mean? *Laboratory Medicine,*40,105-113.

Wolcott, J., Schwartz, A., & Goodman, C. (2008). Laboratory medicine: A National Status Report. Washington, DC: Government Printing Office.

Westland, S. (2014, February 14). The dangers of Likert scale data [Web log post]. Retrieved from http://colourware.org/2014/02/18/the-dangers-of-likert-scale-data/

Xiaoxia, P., Xiaoxia, P., & Jing, W. (2006). *Transformational vs. transactional leadership: The influence of gender and culture on leadership styles in SME's in China and Sweden* (Master's thesis, Kristianstad University, Southern Sweden). Retrieved from http://www.diva-portal.org/smash/get/diva2:230525/fulltext01.pdf

Zimmerman, R., & Darnold, T. (2009). The impact of job performance on employee turnover intentions and the voluntary turnover process: A meta – analysis and path model. *Personnel Review,* 38(2), 142 – 158.

Appendix A
Margin of Error Calculation from the Survey Responses

Binomial Confidence Intervals for Lab Administrators Responses

Numerator (x):	143
Denominator (N):	1943
Proportion (x/N):	.0736
Exact Confidence Interval around Proportion:	.0624 to 0.861

Pezzullo, J., (2009, May 25). Exact binomial and poisson confidence intervals. Retrieved from http://statpages.org/confint.html.

Binomial Confidence Intervals for Human Resources Responses

Numerator (x):	57
Denominator (N):	983
Proportion (x/N):	.0580
Exact Confidence Interval around Proportion:	.0442 to 0.0745

Pezzullo, J., (2009, May 25). Exact binomial and poisson confidence intervals. Retrieved from http://statpages.org/confint.html.

Appendix B
Sample Permission Letter for the MLQ (5X short)

Sample Item Letter

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material for his/her thesis or dissertation research:

Instrument:

Authors:

Copyright:

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Appendix C
Data Collection Tools used in the Study

C-1: Lab Administrator's Demographic Questionnaire
C-2: Human Resources' Demographic Questionnaire
C-3: Sample Items of the Multifactor Leadership Self- report Questionnaire (MLQ 5X short)
C-4: Organizational Culture Assessment Instrument (OCAI)

Laboratory Administrator's Demographic Questionnaire

Survey Code:
Name of hospital: _____
Geographic location of hospital (State): _____
Position/or Title in the Laboratory:_____
email address (optional to be notified of study results): _____

If your healthcare system does not have an in - house clinical/laboratory science department, please disregard survey and this demographic questionnaire.

1. Check all positions that exist in your laboratory.

__ Cytotechnologists (CT's)
__ Histotechnologists/ or Histo technicians (HT's/HLT's)
__ Lab Assistants or Prep Technicians
___ Medical technologists(MT's)
___ Medical Laboratory technicians(MLT's)
___ Phlebotomists

2. Do you laboratory performs: (check the one most applicable)
___ < 100,000 test per year (low volume)
__ between 100,001 to 1 million tests per year (mid volume)
___ > 1 million test per year (high volume)

3. What is your gender?
__ Male
__ Female

4. What is your age in years?
__ 25 – 34
__ 35 – 44
__ 45 – 54
__ 55 – 64
__ 65 and above

5. Are you currently using a retention strategy(ies)?
___ Yes
___ No

6. If so, list what strategies are being used:

_____

_____

Thank you for taking the time to complete the questionnaire and survey. Responding to these questions is voluntary. Any descriptive data gathered from this questionnaire will be reported in aggregate survey form. No participants can be identified by their individual responses.

Human Resources Demographic Questionnaire

Survey Code:
Name of hospital: _____
Geographic location of hospital (State): _____
e mail address (optional to be notified of study results): _____

If your healthcare system does not have an in - house clinical/laboratory science department, please disregard the survey and this demographic questionnaire.

I. Check all positions that exist in your organization.

__ Cytotechnologists (CT's)
__ Histotechnologists/ or Histo technicians(HT's/HLT's)
__ Lab Assistants or Prep Technicians
___ Medical technologists(MT's)
___ Medical Laboratory technicians (MLT's)
___ Phlebotomists

II. Please list turnover numbers for each position over the past (3) years.

Job titles	3 years turnover numbers (N)
CT's	
HT's/or HLT's	
MLT's	
MT's	
Phlebotomists	
Lab Assistants or Prep Techs	

III. Please indicate where the personnel go once leave place of employment/or position (check all that is applicable)

__ another hospital laboratory
__ different laboratory setting i.e. private lab, clinics
__ retirement
__ different career choice
__ not sure
__ another laboratory department (internal transfer)

Thank you for taking the time to complete the questionnaire and survey. Responding to these questions is voluntary. Any descriptive data gathered from this questionnaire will

be reported in aggregate survey form. No participants can be identified by their individual responses.

Sample Items Multifactor Leadership Self- report Questionnaire (MLQ 5X short)

Key: 0 = Not at all	1 = Once in a while	2 = Sometimes	3 = Fairly often	4 = Frequently, if not always

Transformational Leadership Styles		
Idealized Influence (Attributes)	I go beyond self-interest for the good of the group.	0 1 2 3 4
Idealized Influence (Behaviors)	I consider the moral and ethical consequences of decisions.	0 1 2 3 4
Inspirational Motivation	I talk optimistically about the future.	0 1 2 3 4
Intellectual Stimulation	I reexamine critical assumptions to question whether they are appropriate.	0 1 2 3 4
Individualized Consideration	I help others to develop their strengths.	0 1 2 3 4
Transactional Leadership Styles		
Contingent Reward	I make clear what one can expect to receive when performance goals are achieved.	0 1 2 3 4
Management by Exception: Active	I keep track of all mistakes.	0 1 2 3 4
Passive/Avoidant Leadership Styles		
Management by Exception: Passive	I wait for things to go wrong before taking action.	0 1 2 3 4
Laissez-Faire	I avoid making decisions.	0 1 2 3 4

SOURCE: MIND GARDEN, Inc., www.mindgarden.com from the Multifactor Leadership Questionnaire by Bernard M. Bass and Bruce J. Avolio. Copyright © 1995, 2000, 2004 by Bernard M. Bass and Bruce J. Avolio. *Note:* Because the MLQ (5X short) survey is copyrighted, it was not possible to include the entire instrument in the appendix; thus, sample of questions are provided.

Organizational Cultural Assessment Inventory (OCAI)

This questionnaire is to describe the culture within your hospital's laboratory department as you perceive it. Please answer all items on this answer sheet. If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank. **Please answer this questionnaire anonymously.**

Twenty-four descriptive statements are listed on the following pages. Judge how frequently each item fits the laboratory's departmental culture you are describing. Use the following rating scale:

Not at all	Once in a while	Sometimes	Fairly often	Frequently, if not always
0	**1**	**2**	**3**	**4**

Dominant Characteristics

1. The department is a very personal place. It is like an extended family. People seem to share a lot of themselves. **0 1 2 3 4**

2. The department is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks. **0 1 2 3 4**

3. The department is very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented. **0 1 2 3 4**

4. The department is a very controlled and structured place. Formal procedures generally govern what people do. **0 1 2 3 4**

Organizational Leadership

5. The leadership in the department is generally considered to exemplify mentoring, facilitating, or nurturing. **0 1 2 3 4**

6. The leadership in the department is generally considered to exemplify entrepreneurship, innovation, or risk taking. **0 1 2 3 4**

7. The leadership in the department is generally considered to exemplify a no – nonsense, aggressive, results – oriented focus. **0 1 2 3 4**

8. The leadership in the department is generally considered to exemplify coordinating, organizing, or smooth-running efficiency. **0 1 2 3 4**

Management of Employees

9. The management style in the department is characterized by teamwork, consensus, and participation. **0 1 2 3 4**

10. The management style in the department is characterized by individual risk taking, innovation, freedom, and uniqueness. **0 1 2 3 4**

11. The management style in the orientation is characterized by hard – driven competitiveness, high demands, and achievement. **0 1 2 3 4**

12. The management style in the department is characterized by security of employment, conformity, predictability, and stability in relationships. **0 1 2 3 4**

13. The glue that holds the department together is loyalty and and mutual trust. Commitment to this department runs high. **0 1 2 3 4**

Organizational Glue

14. The glue that holds the department together is commitment to innovation and development. There is an emphasis on being on the cutting edge. **0 1 2 3 4**

15. The glue that holds the department together is the emphasis on achievement and goal accomplishment. **0 1 2 3 4**

16. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organization is important. **0 1 2 3 4**

Strategic Emphases

17. The department emphasizes human development. High trust, openness, and participation persist. **0 1 2 3 4**

18. The department emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued. **0 1 2 3 4**

19. The department emphasizes competitive actions and and achievement. Hitting stretch targets and winning in the marketplace are dominant. **0 1 2 3 4**

20. The department emphasizes permanence and stability. Efficiency, control, and smooth operations are important. **0 1 2 3 4**

Criteria of Success

21. The department defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people. **0 1 2 3 4**

22. The department defines success on the basis of having unique or the newest products. It is a product leader and innovator (Product is define as the lab being able to do specific lab tests such as in – house HPV or glucose testing and performing high volume work). **0 1 2 3 4**

23. The department defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key (Competitive market is defined as being able to retain and recruit the best in the profession). **0 1 2 3 4**

24. The department defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low – cost production are critical (Low cost is defined as staying within budget in recruitment and hiring costs). **0 1 2 3 4**

Cameron, K., & Quinn, R. (2011). *Diagnosing and changing organizational culture: Based on the competing values framework.* San Francisco, CA: Jossey – Bass.

Appendix D
Cover letters to potential participants

D-1: Cover letter for Human Resources
D-2: Cover letter for Laboratory Administrators

Cover Letter for Human Resources

ATTN: HR representative for laboratory medicine/pathology

Dear

My name is Tiyi N. Moori and I am working toward a doctorate degree at the Medical University of South Carolina. Part of my research involves anonymized surveys from a representative sample of hospital laboratories. It investigates potential correlations of laboratories' cultures and managers' leadership styles with retention of laboratory science personnel. I am also working on a set of recommendations regarding ways to improve laboratory retention rates in hospitals.

I would like to gather data and insights from hospitals' laboratories human resource representatives/or recruiters (lab managers are being contacted as well with a separate survey). Because of your human resources (HR) experience with the laboratory departments, I would like to invite you to participate by completing the 20 minute survey and demographic questionnaire by Tuesday, November 18, 2014. A follow – up phone call will be made to you in two weeks. Participation is voluntary, strictly confidential, and the survey results will be used only for the research. Also, upon the return of the survey results and completion of the study, the aggregate results would be shared with you and the laboratory department. The link to the survey is https://www.research.net/s/lab_turnover *NOTE: there is an underscore character [_] between the words lab and turnover* and your facility survey code is XXX.

Thank you for your time and I look forward to discussing my research with you. If you have any questions please call/email me (as well as Dr. Zoller, chair of the College of Health Profession) at the information provided below. We appreciate the time that you will take out of your schedule to participate. We believe this project will be an important contribution to the field.

Sincerely,

Tiyi N. Moori, 2015 Doctorate Candidate
336.403.9754
moori@musc.edu

Dr. James Zoller, Chair
Director – Division of Healthcare Leadership
College of Health Professions
Medical University of South Carolina
Charleston, South Carolina 29425 – 7000
(843) 792 – 3849
zollerjs@musc.edu
NOTE: This address was listed as a HR representative for the lab, if you are not the correct recipient please kindly forward to your HR department of laboratory/pathology services.

Cover Letter for Laboratory Administrators

ATTN: Lab Managers

My name is Tiyi N. Moori and I am working toward a doctorate degree at the Medical University of South Carolina. Part of my research involves anonymized surveys from a representative sample of hospital laboratories. It investigates potential correlations of laboratories' cultures and managers' leadership styles with retention of laboratory science personnel. I am also working on a set of recommendations regarding ways to improve laboratory retention rates in hospitals.

I would like to gather data and insights from hospitals' laboratories clinical and anatomic pathology managers. Because of your management experience with the laboratory departments, I would like to invite you to participate by completing the 20 minute survey and demographic questionnaire by Tuesday, December 16, 2014. A follow – up phone call will be made to you in two weeks. Participation is voluntary, strictly confidential, and the survey results will be used only for the research. Also, upon the return of the survey results and completion of the study, the aggregate results would be shared with you and the laboratory department. The link to the survey is http://transform.mindgarden.com/survey/15915 and your facility survey code is XXXX.

Thank you for your time and I look forward to discussing my research with you. If you have any questions please call/email me (as well as Dr. Zoller, chair of the College of Health Profession) at the information provided below. We appreciate the time that you will take out of your schedule to participate. We believe this project will be an important contribution to the field.

Sincerely,

Tiyi N. Moori, 2015 Doctorate Candidate
336.403.9754
moori@musc.edu
Dr. James Zoller, Chair
Director – Division of Healthcare Leadership
College of Health Professions
Medical University of South Carolina
Charleston, South Carolina 29425 – 7000
(843) 792 – 3849
zollerjs@musc.edu

PLEASE NOTE: The use of the No-Login link for a specific participant is computer/browser specific. In the scenario where the participant selects the No-Login link and is unable to complete the assessment in one-sitting, the participant will be able to re-select the link within the SAME computer and SAME browser to continue with the assessment where the participant left off.

Appendix E
Endorsement Letter

October 31, 2014

RE: Endorsement of Tiyi Moori's Research of Hospitals' Medical Laboratories

Dear Sir or Madam:

Tiyi Moori is a student at the Medical University of South Carolina who is currently working on her dissertation. I have reviewed her proposal that describes hospital laboratories' cultures and retention. I encourage you to take just a few minutes of your time to complete the enclosed questionnaires. This information will provide immediate value to the medical laboratory field and to your organization.

I am committed to supporting Ms. Moori in her studies, and believe this project will be an important contribution to our profession.

Sincerely,

Erwin Blair Holladay, Ph.D.

E. Blair Holladay, PhD, SCT(ASCP)^{CM}
Chief Executive Officer
American Society for Clinical Pathology
33 West Monroe St., Suite 1600
Chicago, Illinois 60603-5300
312-541-4885 (T)
312-541-4750 (F)
843-442-1724 (C)

Appendix F
IRB Approval Letter

Institutional Review Board for Human Research (IRB)

Office of Research Integrity (ORI)
Medical University of South Carolina

Harborview Office Tower
19 Hagood Ave., Suite 601, MSC857
Charleston, SC 29425-8570
Federal Wide Assurance # 1888

APPROVAL:
This is to certify that the research proposal **Pro00036184** entitled:
A Necessary Intervention: Diagnosing the Culture of Hospital Laboratories to Improve Employee Retention

Submitted by: **Ty Moori**
Department: **Medical University of South Carolina**

for consideration has been reviewed by **IRB-I - Medical University of South Carolina** and approved. In accordance with 45 CFR 46.101(b)(2), the referenced study is exempt from Human Research Subject Regulations. No further action or Institutional Review Board (IRB) oversight is required, as long as the project remains the same. However, you must inform this office of any changes in procedures involving human subjects. Changes to the current research protocol could result in a reclassification of the study and further review by the IRB.

Because this project was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

Research related records should be retained for a minimum of three years after termination of the study.

Approval Date: **8/26/2014**

Type: **Exempt**

Administrator, **IRB - Medical University of South Carolina**
Katherine Bright
***Electronic Signature**: This document has been electronically signed by the IRB Chairman throughthe HSSC eIRB Submission System authorizing IRB approval for this study as described in this letter.*

Appendix G
OCAI Culture Definition (Competing Values Framework) Types

Clan Culture (Collaborate)

This working environment is a friendly one. People have a lot in common, and it's similar to a large family. The leaders or the executives are seen as mentors or maybe even as father figures. The organization is held together by loyalty and tradition. There is great involvement. The organization emphasizes long-term Human Resource development and bonds colleagues by morals. Success is defined within the framework of addressing the needs of the clients and caring for the people. The organization promotes teamwork, participation, and consensus.

Leader Type: facilitator, mentor, team builder

Adhocracy Culture (Create)

This is a dynamic and creative working environment. Employees take risks. Leaders are seen as innovators and risk takers. Experiments and innovation are the bonding materials within the organization. Prominence is emphasized. The long-term goal is to grow and create new resources. The availability of new products or services is seen as success. The organization promotes individual initiative and freedom.

Leader Type: Innovator, entrepreneur, visionary

Market Culture (Compete)

This is a results-based organization that emphasizes finishing work and getting things done. People are competitive and focused on goals. Leaders are hard drivers, producers, and rivals at the same time. They are tough and have high expectations. The emphasis on winning keeps the organization together. Reputation and success are the most important. Long-term focus is on rival activities and reaching goals. Market penetration and stock are the definitions of success. Competitive prices and market leadership are important. The organizational style is based on competition.

Leader Type: Hard driver, competitor, producer

Hierarchy Culture (Control)

This is a formalized and structured work environment. Procedures decide what people do. Leaders are proud of their efficiency-based coordination and organization. Keeping the organization functioning smoothly is most crucial. Formal rules and policy keep the organization together. The long-term goals are stability and results, paired with efficient and smooth execution of tasks. Trustful delivery, smooth planning, and low costs define success. The personnel management has to guarantee work and predictability.
Leader Type: Coordinator, monitor, organizer
Cameron, K., & Quinn, R. (2011). *Diagnosing and changing organizational culture: Based on the competing values framework.* San Francisco, CA: Jossey – Bass.

TABLES

Table 1

Transformational Leadership (TFL) Behaviors

Idealized Influence **(Inspiring)**	Leaders are viewed in an idealized way and have a positive influence over staff. These type of leaders inspire their staff through extra personal effort and encourage development. They are socially oriented and willing to inhibit their use of power.
Attributes (IIA)	Leaders act in ways to build trust.
Behaviors (IIB)	Leaders specify the importance of having a strong sense of purpose.
Inspirational Motivation (IM) **(Motivating)**	Leaders inspire their staff through visions of what is possible and how to attain them. They enhance meaning and promote positive expectations about what needs to be done. They inspire for the greater good of the group rather for themselves.
Intellectual Stimulation (IS) **(Encouraging)**	Leaders involves the intellectual stimulation of staff's ideas and values. They help staff think about old problems in new ways. Staff learn to solve problems on their own by being creative and innovative. Leader's effectiveness is measure by how capable staff can perform operational duties without the leader's presence or direct involvement.
Individualized Consideration (IC) **(Mentoring/Coaching)**	Leaders understands and shares staff's concerns and treat each individual uniquely. Leaders attempt to recognize and satisfy staff needs by working one – on – one with them and helping them reach their full potential.

Transformational Leadership (TFL) Behaviors also known as the 5I's (Bass & Avolio, 2004.)

Table 2

Transactional Leadership Behaviors

Contingent Rewards (CR) **(Energizing)**	Leaders recognize the roles and tasks required for staff to reach desired outcomes and clarifies what staff needs to do for a reward. Leaders actively set standards.
Management by Exception Active (MBEA) **(Proficient)**	Leaders maintain the status quo and stress corrective actions to improve performances.

Transactional Leadership (TRL) Behaviors (Bass & Avolio, 2004).

Table 4

CVF Culture Types

Culture Types measure by OCAI	Descriptions
Clan	Team –like environment
Adhocracy	Creativity
Market	Competitive (leaders are focus on winning)
Hierarchy	Structured and control, environment govern by rules and policies.

CVF culture types. Four culture types measure by OCAI.

Table 6

Number of Mailings and Responses by State

	No of surveys sent		No. of responses			No. of surveys sent		No. of responses	
South	OC AI	MLQ (5X)	OCAI	MLQ (5X)	**West**	OCAI	MLQ (5X)	OCAI	MLQ(5X)
Arkansas	33	63	7	16	Arizona	12	24	4	4
Alabama	57	114	2	12	Colorado	71	142	3	11
Kentucky	119	226	7	11	Idaho	14	28	0	5
Louisiana	117	234	5	9	Oregon	11	22	4	6
South Carolina	83	159	10	11					
Mid west					**North east**				
Indiana	67	134	13	10	Connecticut	57	107	2	5
Illinois	150	273	17	23	Delaware	10	19	0	0
Kansas	39	78	4	7	Maryland	22	13	3	7
Wisconsin	121	242	7	5					

Number of Mailings and Responses from the 16 selected states. Sixteen states were selected and surveys were sent out to four or five states per region. Rhode Island was initially included in the sample but was excluded because after further selection review, the state has less than eight accredited hospital laboratories. A higher concentration of surveys were sent out to the South and the Mid west regions which may contributed to why higher responses were received from these regions versus other regions in the study.

Table 11

Descriptive Statistics for Transformational Leadership Behaviors (5I's)

Transformational Leadership (TFL) Style Behaviors

Case Summaries

Lab Administrator's Gender		Idealized Influence Attributes (IIA)	Idealized Influence Behaviors (IIB)	Inspirational Motivation (IM)	Intellectual Stimulation (IS)	Individualized Consideration (IC)
Female	N	84	84	84	84	84
	Mean	3.14	3.19	3.26	3.16	3.29
	Std. Deviation	.579	.510	.547	.481	.485
Male	N	58	58	58	58	58
	Mean	3.06	3.10	3.16	3.16	3.24
	Std. Deviation	.648	.587	.643	.495	.486
Total	N	142	142	142	142	142
	Mean	3.11	3.15	3.22	3.16	3.27
	Std. Deviation	.607	.542	.588	.485	.484

Descriptive Statistics for transformational leadership behaviors. The table contains the means and standard deviations of male and female lab administrators with TFL behaviors. Transformational Leadership is measured according to the following five behaviors (5I's): Idealized Influence Attributes (IIA), Idealized Influence Behaviors (IIB), Inspirational Motivation (IM), Intellectual Stimulation (IS), and Individualized Consideration (IC). Lab Administrators reported engaging in more than one TFL behaviors. Actual counts are shown in Table 6 (*see* Tables)

Table 12

Descriptive Statistics for Transactional Leadership Behaviors

Transactional Leadership (TRL) Style Behaviors

Case Summaries

Lab Administrator's Gender		Contingent Reward (CR)	Management By Exception Active (MBEA)
Male	N	58	58
	Mean	3.07	2.08
	Std. Deviation	.599	.889
Female	N	84	84
	Mean	3.23	2.06
	Std. Deviation	.572	.855
Total	N	142	142
	Mean	3.16	2.07
	Std. Deviation	.586	.866

Descriptive Statistics for transactional leadership behaviors. Table contains the means and standard deviations of male and female lab administrators with TRL behaviors. Transactional Leadership is measured according to the following two behaviors: Contingent Reward (CR) and Management by Exception Active (MBEA) (*see* counts in *Figure 3*).

Table 13

Counts of More than One TFL Behaviors reported by Lab Administrators

	Male	Female
Idealized Attributes	7	9
Idealized Behaviors	4	7
Inspirational Motivation	8	12
Intellectual Stimulation	9	7
Individualized Consideration	6	18
Idealized Attributes and Behaviors	1	3
Idealized Attributes, Idealized Behaviors, and Inspirational Motivation	1	0
Idealized Attributes, Idealized Behaviors, Inspirational Motivation, and Intellectual Stimulation	0	2
Idealized Attributes, Idealized Behaviors, Inspirational Motivation, and Individualized Consideration	0	1
Idealized Attributes, Idealized Behaviors, Individualized Consideration	1	0
Idealized Behaviors, Intellectual Stimulation, and Individualized Consideration	2	1
Idealized Behaviors and Inspirational Motivation	3	3
Idealized Behaviors and Intellectual Stimulation	0	2
Idealized Behaviors and Individualized Consideration	3	1
Inspirational Motivation, Intellectual Stimulation, and Individualized Consideration	2	1
Inspirational Motivation and Individualized Consideration	2	1
Idealized Behaviors, Inspirational Motivation, Intellectual Stimulation, and Individualized Consideration	1	1
Idealized Behaviors, Inspirational Motivation, and Individualized Consideration	1	2
Idealized Attributes, Inspirational Motivation, and Intellectual Stimulation	1	1
Idealized Attributes, Inspirational Motivation, and Individualized Consideration	0	1

Idealized Attributes and Individualized Consideration	1	1
Idealized Behaviors, Inspirational Motivation, and Intellectual Stimulation	0	2
Intellectual Stimulation and Individualized Consideration	3	7
Idealized Attributes and Inspirational Motivation	1	1
N=	**57**	**84**

Counts of more than one TRL behaviors reported by (Gender) Lab Administrators. The behaviors are not mutually exclusive, a given lab administrator can report engaging in more than one behaviors.

Table 18

Contingency Table for Leadership Styles and Gender

Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL) * Gender Crosstabulation

			Gender		
			Female	Male	Total
Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	TFL	Count	71	52	123
		Expected Count	72.8	50.2	123.0
		% within Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	57.7%	42.3%	100.0%
		% within Gender	84.5%	89.7%	86.6%
		% of Total	50.0%	36.6%	86.6%
	TRL	Count	13	6	19
		Expected Count	11.2	7.8	19.0
		% within Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	68.4%	31.6%	100.0%
		% within Gender	15.5%	10.3%	13.4%
		% of Total	9.2%	4.2%	13.4%
Total		Count	84	58	142
		Expected Count	84.0	58.0	142.0
		% within Transformational Leadership Style (TFL) and Transactional Leadership Style (TRL)	59.2%	40.8%	100.0%
		% within Gender	100.0%	100.0%	100.0%
		% of Total	59.2%	40.8%	100.0%

Contingency Table for Leadership Styles and Gender. Of the 84 lab administrators who are females, 71 (84.5%) perceive themselves as transformational leaders (TFL) and 13 (15.5%) perceive themselves as transactional leaders (TRL) based on the highest average score of all TFL behaviors. Of the 58 lab administrators who are males, 52 (89.7%) perceive themselves as transformational leaders (TFL) and 6 (10.3%) perceive themselves as transactional leaders (TRL) based on the highest average score of all TRL behaviors. Moreover, 57.7% of female lab administrators who reported themselves as being TFL leaders compare to 68.4% as being TRL leaders, indicates that TRL leaders in this survey are 11% most likely to be female. Similarly, 42.3% of male lab administrators who reported themselves as being TFL leaders compare to 31.6% as being TRL leaders, indicates that TFL leaders in this survey are 11% most likely to be male.

Table 24

Spearman's rho Correlation Output for Average Scores

Correlations

			Average TFL Scores of Lab Administrators	Average TRL Scores of Lab Administators	Average HR Scores
Spearman's rho	Average TFL Scores of Lab Administrators	Correlation Coefficient	1.000	.224	.216
		Sig. (2-tailed)	.	.462	.478
		N	13	13	13
	Average TRL Scores of Lab Administators	Correlation Coefficient	.224	1.000	.383
		Sig. (2-tailed)	.462	.	.196
		N	13	13	13
	Average HR Scores	Correlation Coefficient	.216	.383	1.000
		Sig. (2-tailed)	.478	.196	.
		N	13	13	13

Spearman's rho correlation SPSS's output for average scores. Spearman's Correlation output of average TFL vs. average HR scores and average TRL vs. average HR scores. Table shows a somewhat weak positive correlation of HR responses to lab administrators' responses, and the p – values are greater than the .05 significance level.